HOWARD W. SAMS & COMPANY CP29 09011

COMPUTERFACTS™

Technical Service Data

C.ITOH®

MODEL PROWRITER JR

PRINTER

FEATURES COMPLETE SCHEMATICS • PRELIMINARY SERVICE CHECKS • TROUBLESHOOTING TIPS • EASY-READ WAVEFORMS • REPLACEMENT PARTS LISTS • SEMICONDUCTOR CROSS-REFERENCE

PRELIMINARY SERVICE CHECKS

This data provides the user with a time-saving service tool which is designed for quick isolation and repair of Printer malfunctions.

Check all interconnecting cables for good connection and correct hookup before making service checks.

Replacement or repair of the Main Board or connectors may be necessary after the malfunction has been isolated.

TEST EQUIPMENT AND TOOLS

TEST EQUIPMENT

Digital Volt/Ohm Meter
Logic Probe

TOOLS

Low Wattage Soldering Iron
Desoldering Equipment
Head Cleaning Equipment
Phillips Screwdriver
Flat Blade Screwdriver

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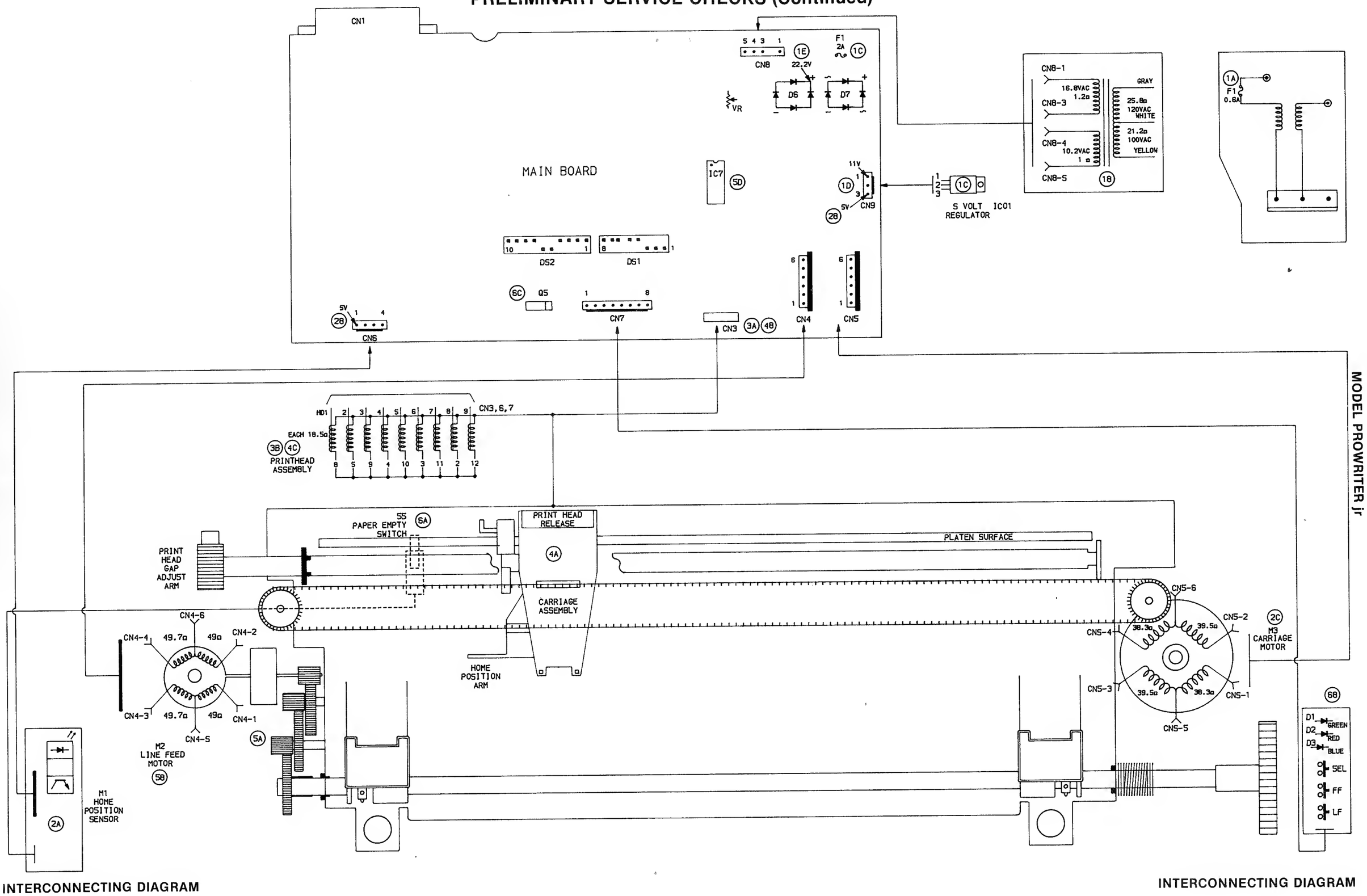
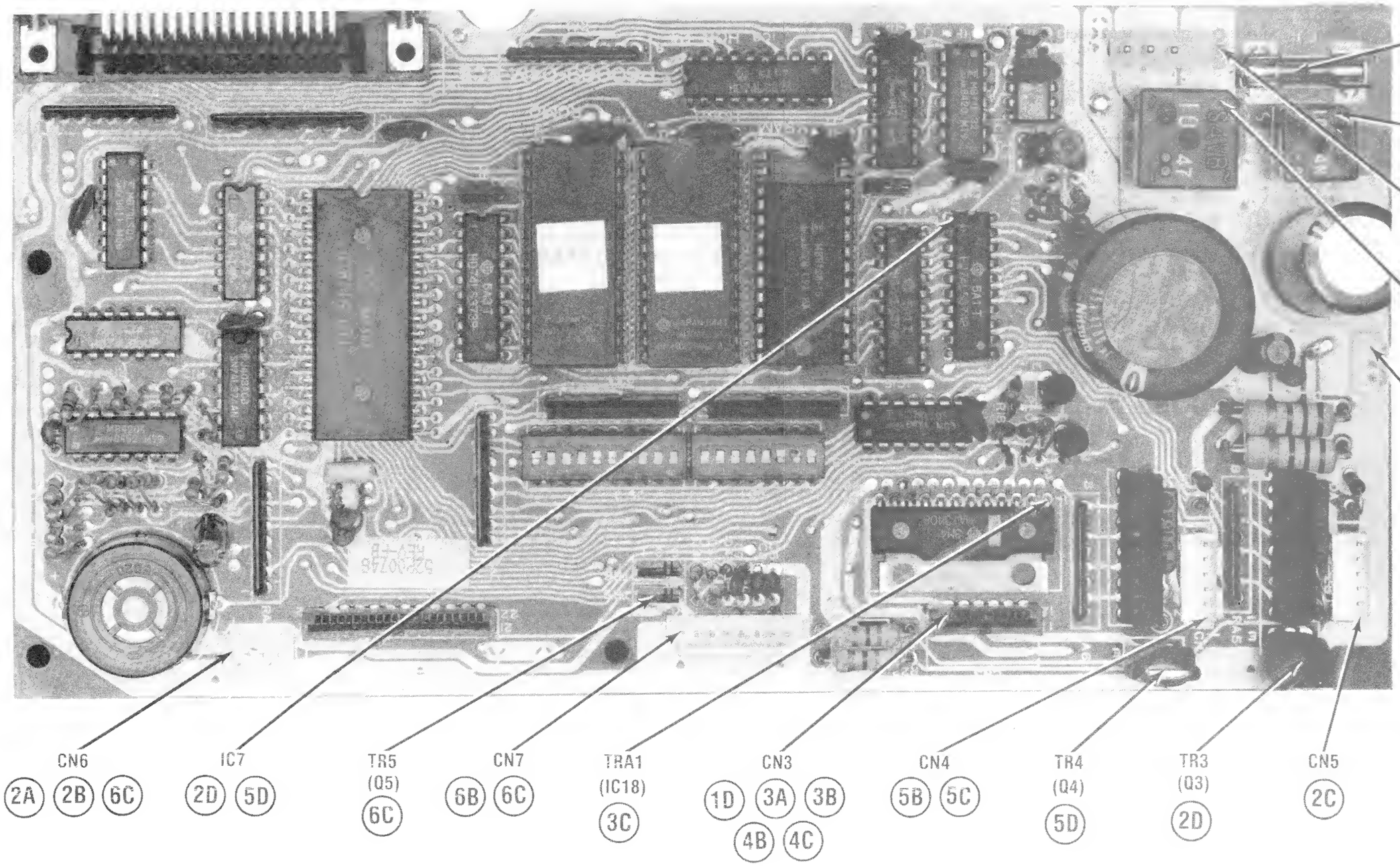
MODEL PROWRITER jr

SAMS™ Howard W. Sams & Co.
4300 West 62nd Street, P.O. Box 7092, Indianapolis, Indiana 46206 U.S.A.

87CP19014 DATE 8-87


CN1
MAIN BOARD
CN8
22.2V
F1
2A
VR
D6
D7
IC7
11V
CN9
5V
S VOLT IC01
REGULATOR
CN8-1
16.8VAC 1.2Ω
CN8-3
10.2VAC 1Ω
CN8-4
CN8-5
GRAY
25.8Ω 120VAC WHITE
21.2Ω 100VAC YELLOW
F1 0.6A
DS2
DS1
Q5
CN7
CN6
CN3
CN4
CN5
HD1
CN3,6,7
EACH 18.5Ω
PRINTHEAD ASSEMBLY
PAPER EMPTY SWITCH
PRINT HEAD RELEASE
PLATEN SURFACE
PRINT HEAD GAP ADJUST ARM
CARRIAGE ASSEMBLY
HOME POSITION ARM
CN4-6
CN4-4
CN4-2
CN4-3
CN4-1
CN4-5
49.7Ω
49Ω
M2 LINE FEED MOTOR
M1 HOME POSITION SENSOR
CN5-6
CN5-2
CN5-4
CN5-3
CN5-1
CN5-5
38.3Ω
39.5Ω
M3 CARRIAGE MOTOR
D1 GREEN
D2 RED
D3 BLUE
SEL
FF
LF


F1 1C
D7 1C 1D
CN8 1B
D6 1E
CN9 1C 2B
CN6 2A 2B 6C
IC7 2D 5D
TR5 (Q5) 6C
CN7 6B 6C
TRA1 (IC18) 3C
CN3 1D 3A 3B 4B 4C
CN4 5B 5C
TR4 (Q4) 5D
TR3 (Q3) 2D
CN5 2C

SERVICE CHECKS

MATCH THE NUMBERS ON THE INTERCONNECTING DIAGRAM AND PHOTOS WITH THE NUMBERS ON THE SERVICE CHECKS TO BE PERFORMED.

(1) POWER SUPPLY

(A) Check AC Fuse (F1). If open check Bridge Rectifiers (D6 and D7).

(B) Check for 16.8VAC between pins 1 and 3 of Connector CN8 and 10.2VAC between pins 4 and 5 of Connector CN8. If voltages are not present, check Power Transformer, Power Switch and AC cable.

(C) Check AC Fuse on Main Board, if open check Bridge Rectifier (D7) and Regulator IC (IC01).

(D) Check for 5V at pin 3 of Connector CN3, if 5V is not present, check for 11.0V at pin 1, If the 11V is present, check Regulator IC (IC01). If 11V is not present, check Bridge Rectifier (D7) and associated components.

(E) Check for 2.2V at the cathode of Bridge Rectifier (D6). If the voltage is not present, check D6 by substitution.

(2) PRINTER CARRIAGE ASSEMBLY

(A) If Printer carriage assembly moves erratically, check the Home Position Sensor.

(B) Check for 5V at pin 1 of Connector CN6. If 5V is not present, check the 5V at pin 3 of Connector CN9. If voltages are not correct, refer to the "Power Supply" section of this troubleshooting guide.

(C) If carriage assembly does not move, check Carriage Motor (M3).

(3) PRINT HEAD WILL NOT PRINT

(A) Check Connector CN3 for good connection.

(B) Disconnect Connector CN3 and check the resistance of the Print Head Solenoids. If any reading is not correct, replace the print head assembly.

(4) MISSING DOTS IN THE PRINT PATTERN

(A) Clean Print Head face.

(B) Check Connector CN3 for good connection.

(C) Disconnect Connector CN3 and check the resistance of the Print Head Solenoids.

(5) LINEFEED WILL NOT OPERATE

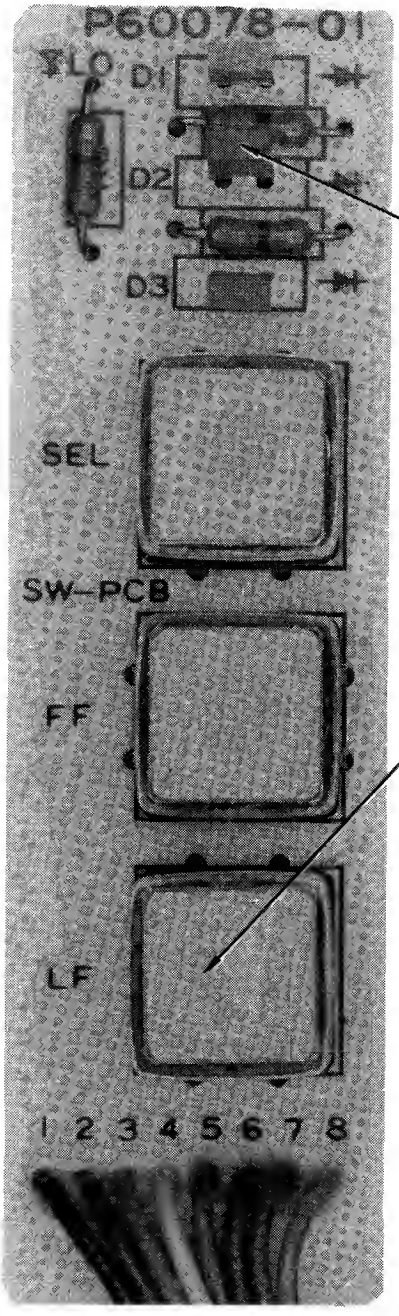
(A) Check the gear assembly on the left side of the platen.

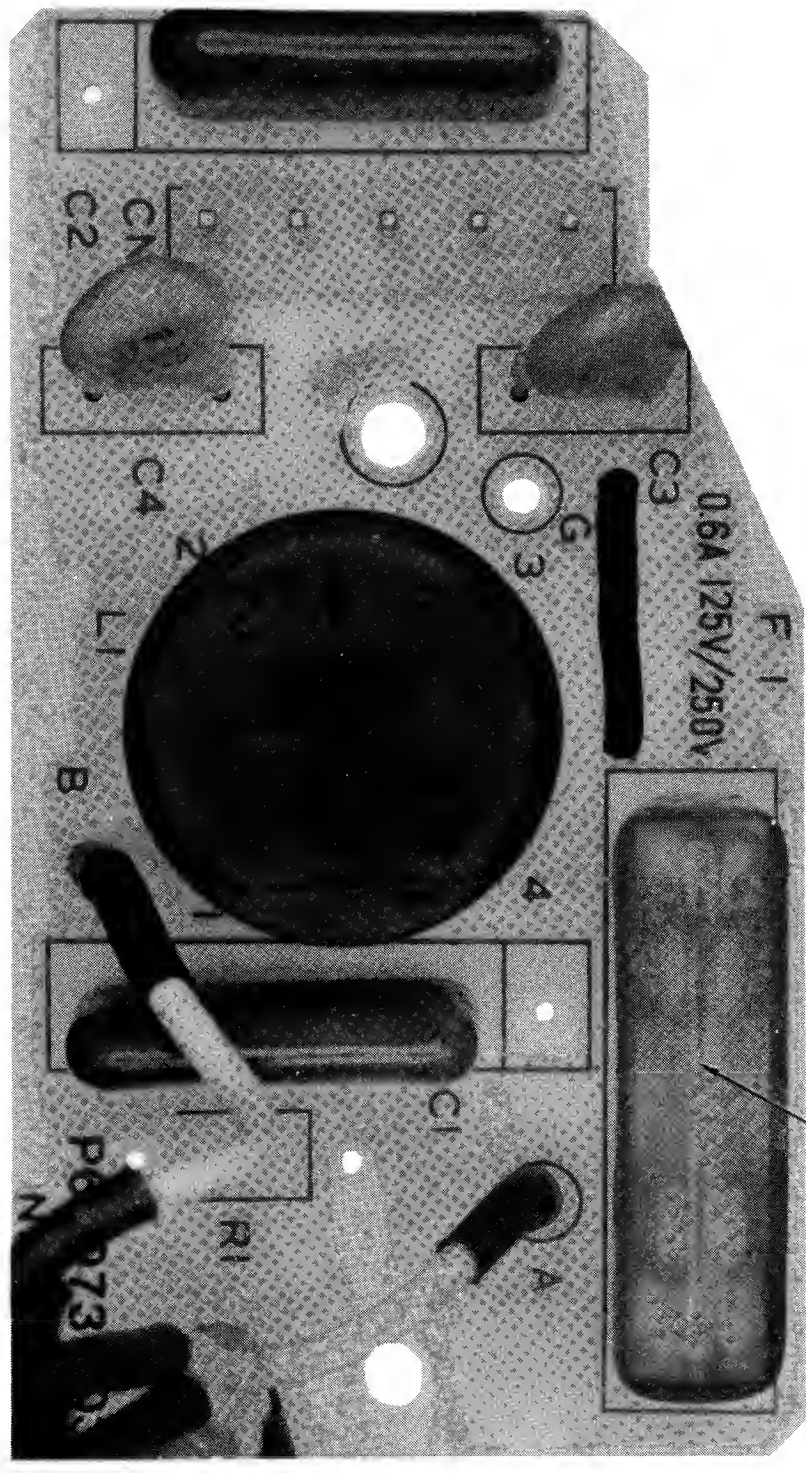
(B) Check Linefeed Motor (M2).

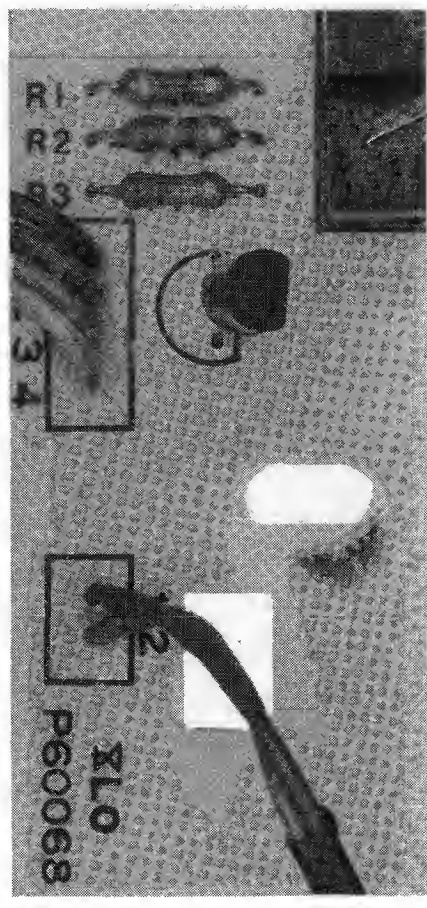
(6) PAPER INDICATOR NOT OPERATING

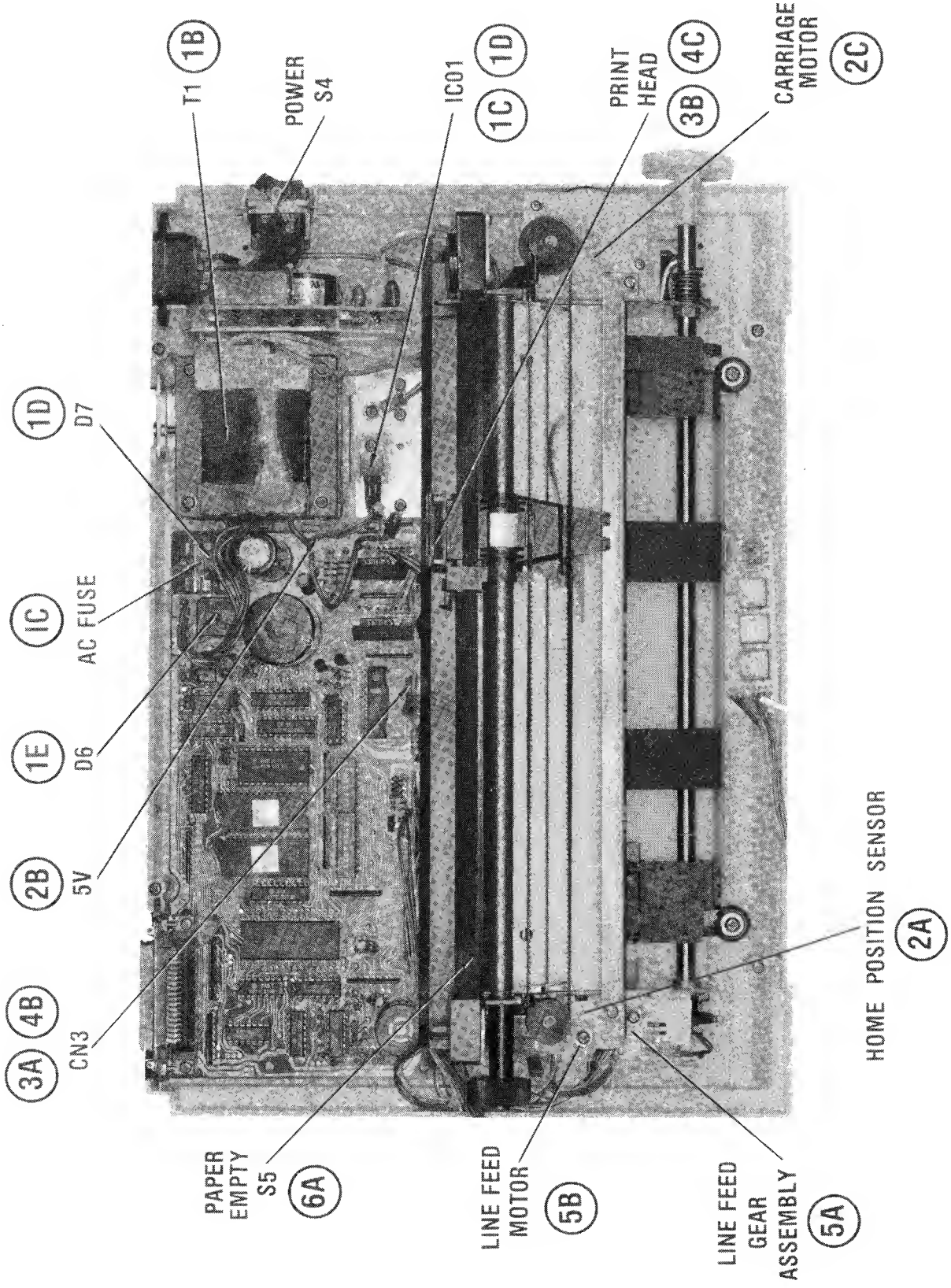
(A) If the Paper Empty Indicator is Off all the time, check Paper Empty LED by substitution.

(C) Check Transistor Q5 by substitution.


P60078-01
VLO
D1
D2
D3
SEL
SW-PCB
FF
LF
1 2 3 4 5 6 7 8
6B
D2
LF
5A
S3
6A


C2
CN
C4
C3
G
3
F 1
06A 125V/250V
L1
B
4
C1
R1
A
1A
F1


HOME
POSITION
M1
2A
R1
R2
R3
P60068



CHASSIS - OVERALL VIEW

PRELIMINARY SERVICE CHECKS (Continued)
PREVENTATIVE MAINTENANCE

ENVIRONMENT

Computers perform best in a clean, cool area that is below 80 degrees Fahrenheit and free of dust and smoke particles. Even though home Computers are not affected by cigarette smoke as much as commercial Computers are affected, it is better to maintain a smoke-free area around the Computer. Do not block cabinet vents of Computer, Monitor, Printer, or other power devices.

ELECTRICAL POWER

Variations in the line voltage can affect the Computer. Try to avoid these fluctuations by using an AC receptacle that is on a power line not used by appliances or other heavy current demand devices. A power-surge protector, power-line conditioner, or non-interruptable power supply may be needed to cure the problem. **Do not** switch power On and Off frequently.

KEYBOARD

Liquids spilled into the Keyboard can ruin it. Immediately after a spill occurs, disconnect the Computer power plug from AC power outlet. Then, if circuitry or contacts are contaminated, disassemble the Keyboard and carefully rinse the Keyboard printed circuit board with distilled water and let it dry. Use a cotton swab to clean between the keys. Use a non-abrasive contact cleaner and lint-free wipers on accessible connectors and contacts.

DISK DRIVES

Clean the read/write heads of the Disk Drives about once a month or after 100 hours usage. Use only an approved head cleaning kit.

Handle carefully to preserve proper disk head alignment. A sudden bump or jolt to the Disk Drives can knock the disk head out of alignment. If Disk Drive must be transported, place an old disk in slot and close door during transport.

Store disks in their protective covers and never touch the disk surface. Observe the disk handling precautions usually found on the back of disk protective covers.

PRINTERS

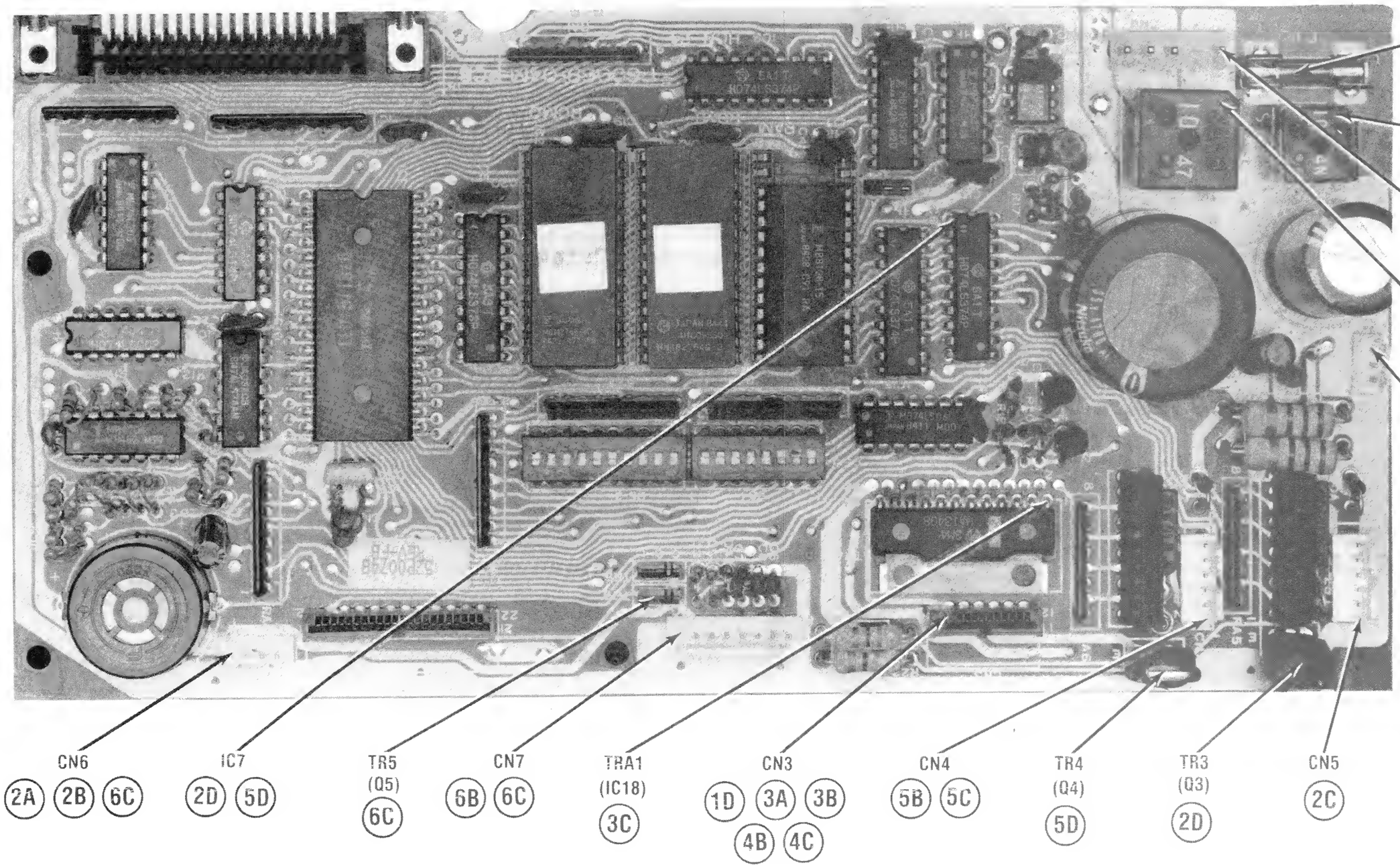
Carefully vacuum the Printer regularly. Wipe surface areas clean using a light all-purpose cleaner. Do not oil the machine. The oil will collect abrasive grit and dust. The dust will act as a blanket. This can cause components to overheat and fail.

STATIC ELECTRICITY

Static electricity discharge can affect the Computer. In order to minimize the possibility, use anti-static mats, sprays, tools and materials, and maintain good humidity in the Computer environment.

MONITOR

Use an isolation transformer with any Monitor that does not come as part of the system since some Monitors use a HOT chassis (chassis connected to one side of the AC line). The face of the Monitor should never be left on for long period of time at high brightness level except when pattern is being changed periodically. Use caution when cleaning anti-glare screens, to preserve the glare-reduction feature.


F1 1C
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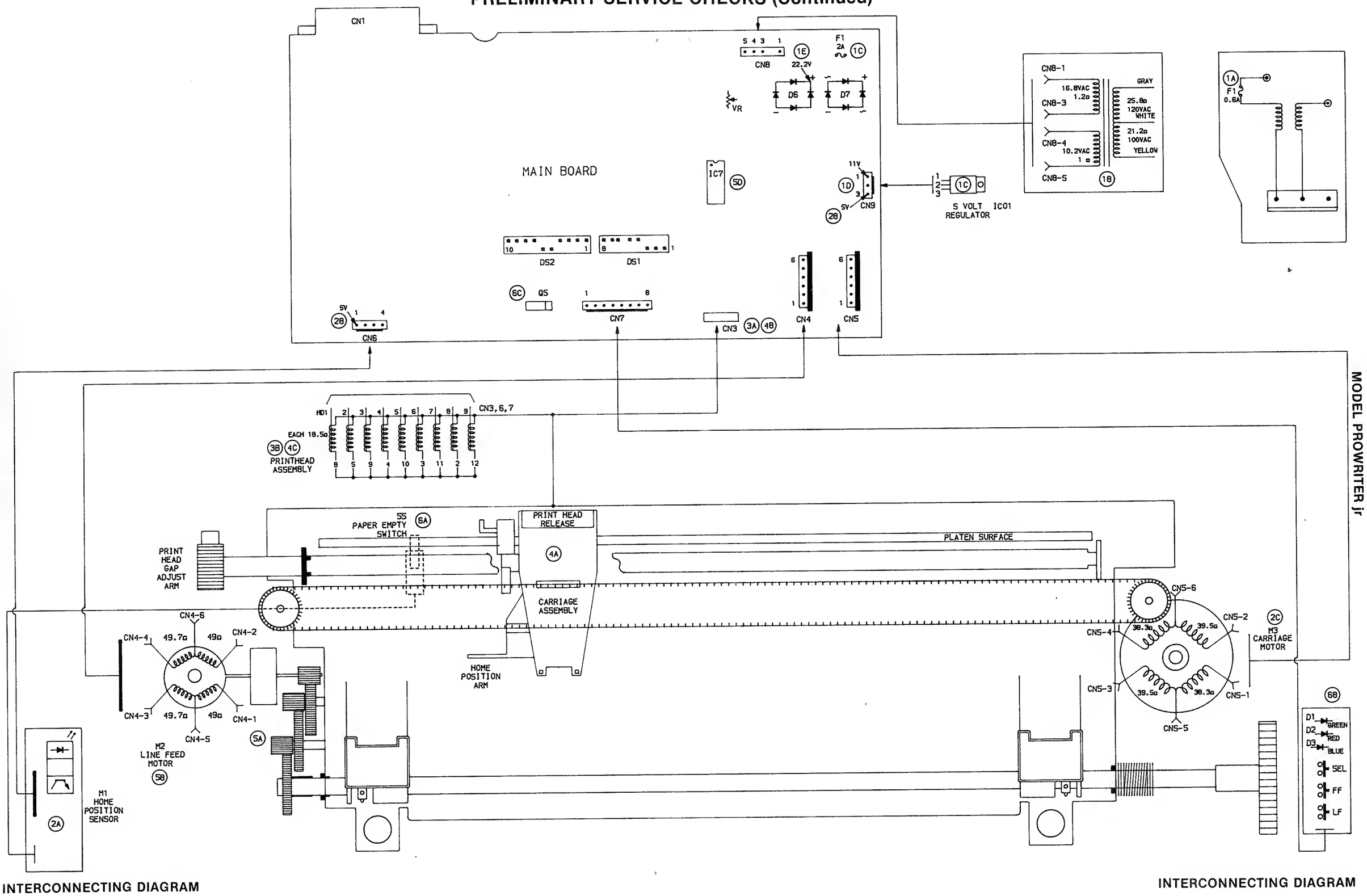
CN8 1B
D6 1E
CN9 1C 2B
CN6 2A 2B 6C
IC7 2D 5D
TR5 (Q5) 6C
CN7 6B 6C
TRA1 (IC18) 3C
CN3 1D 3A 3B 4B 4C
CN4 5B 5C
TR4 (Q4) 5D
TR3 (Q3) 2D
CN5 2C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CN4
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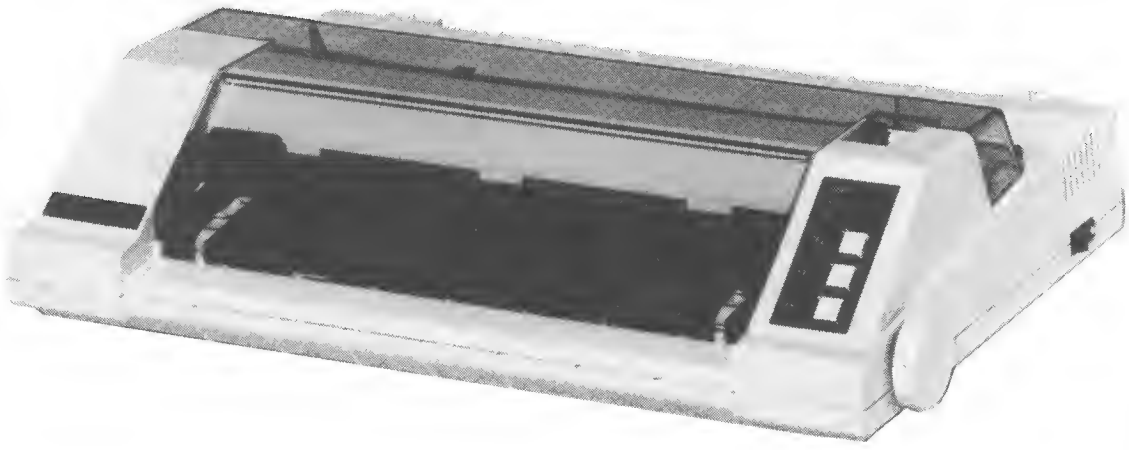
D2 RED
D3 BLUE
SEL
FF
LF

NOTES



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SAFETY PRECAUTIONS

See page 9

SERVICE INFORMATION

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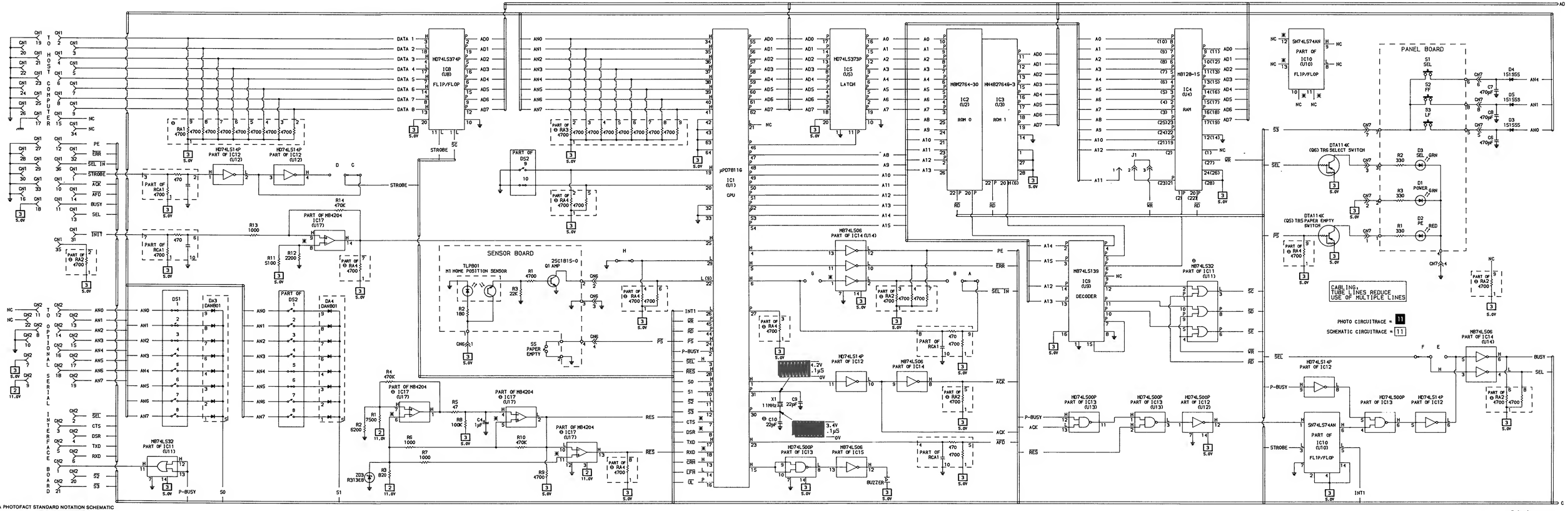

A PHOTOFACT STANDARD NOTATION SCHEMATIC WITH CIRCUITRACE

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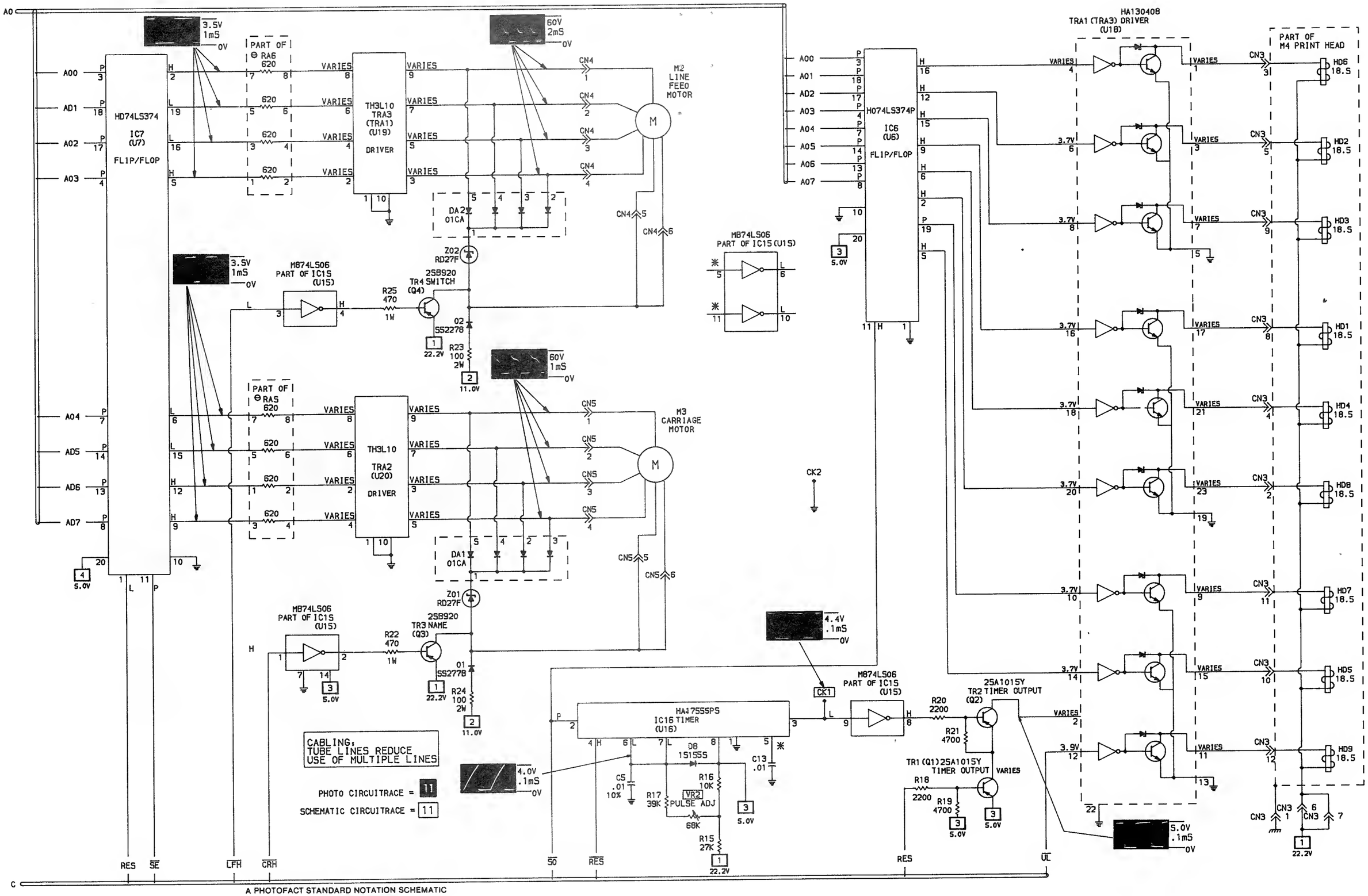
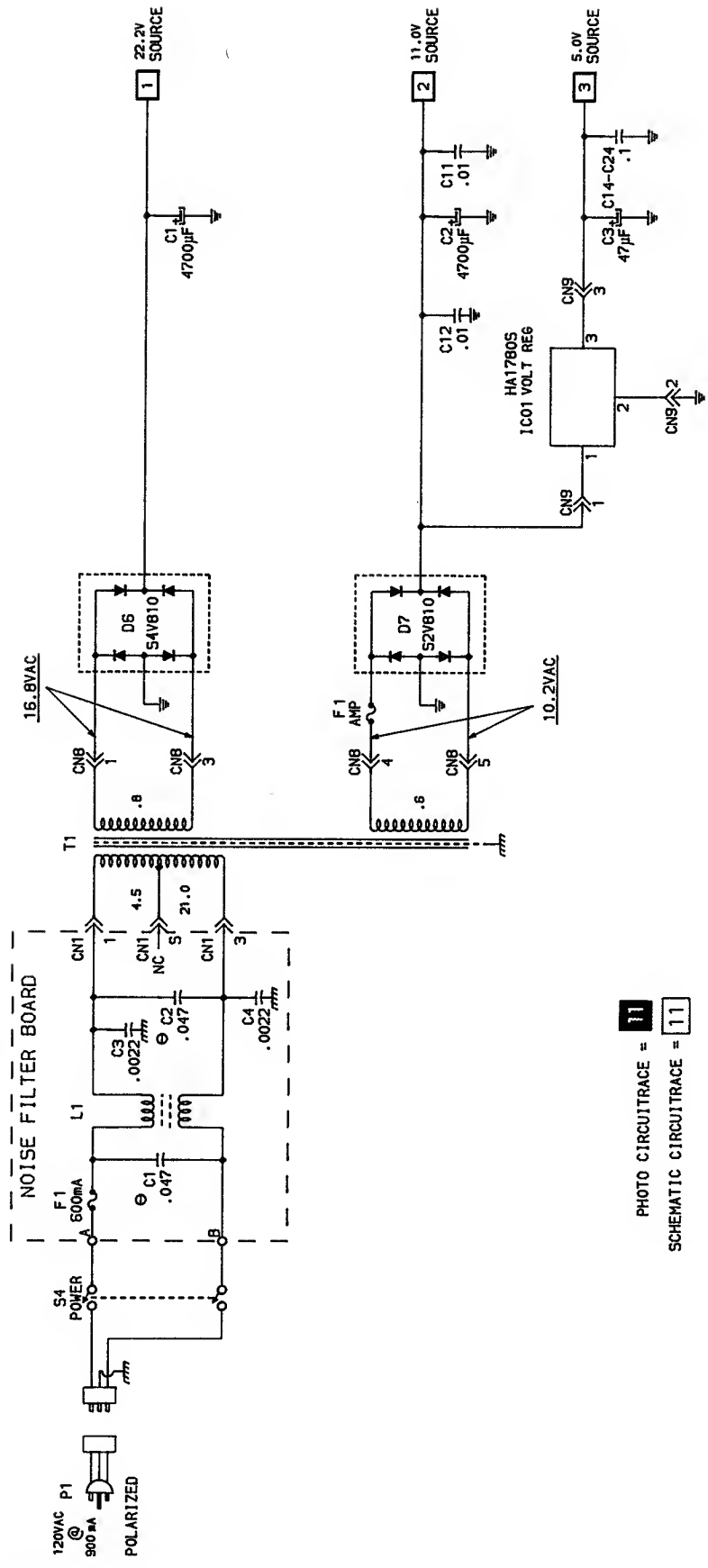


A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE®



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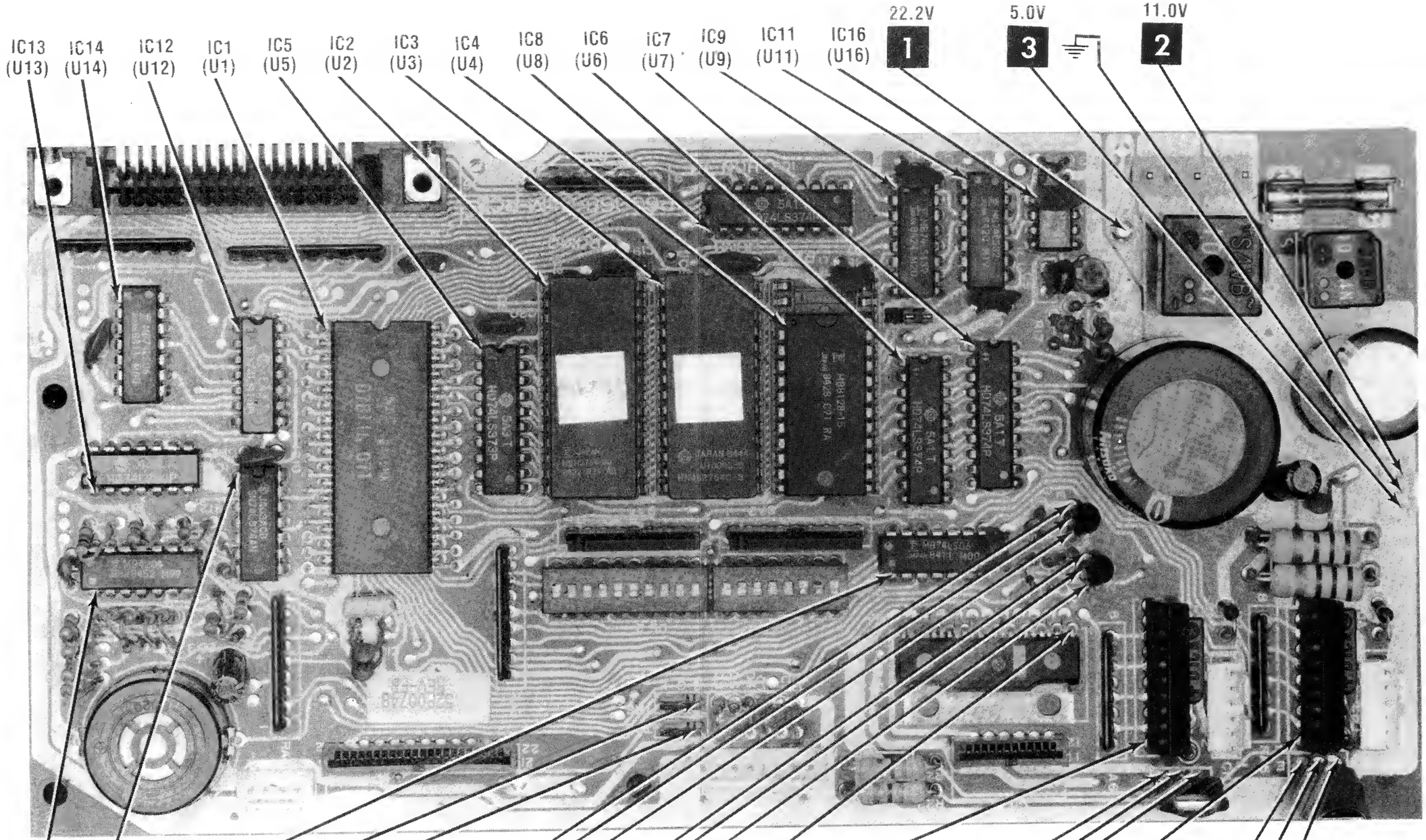
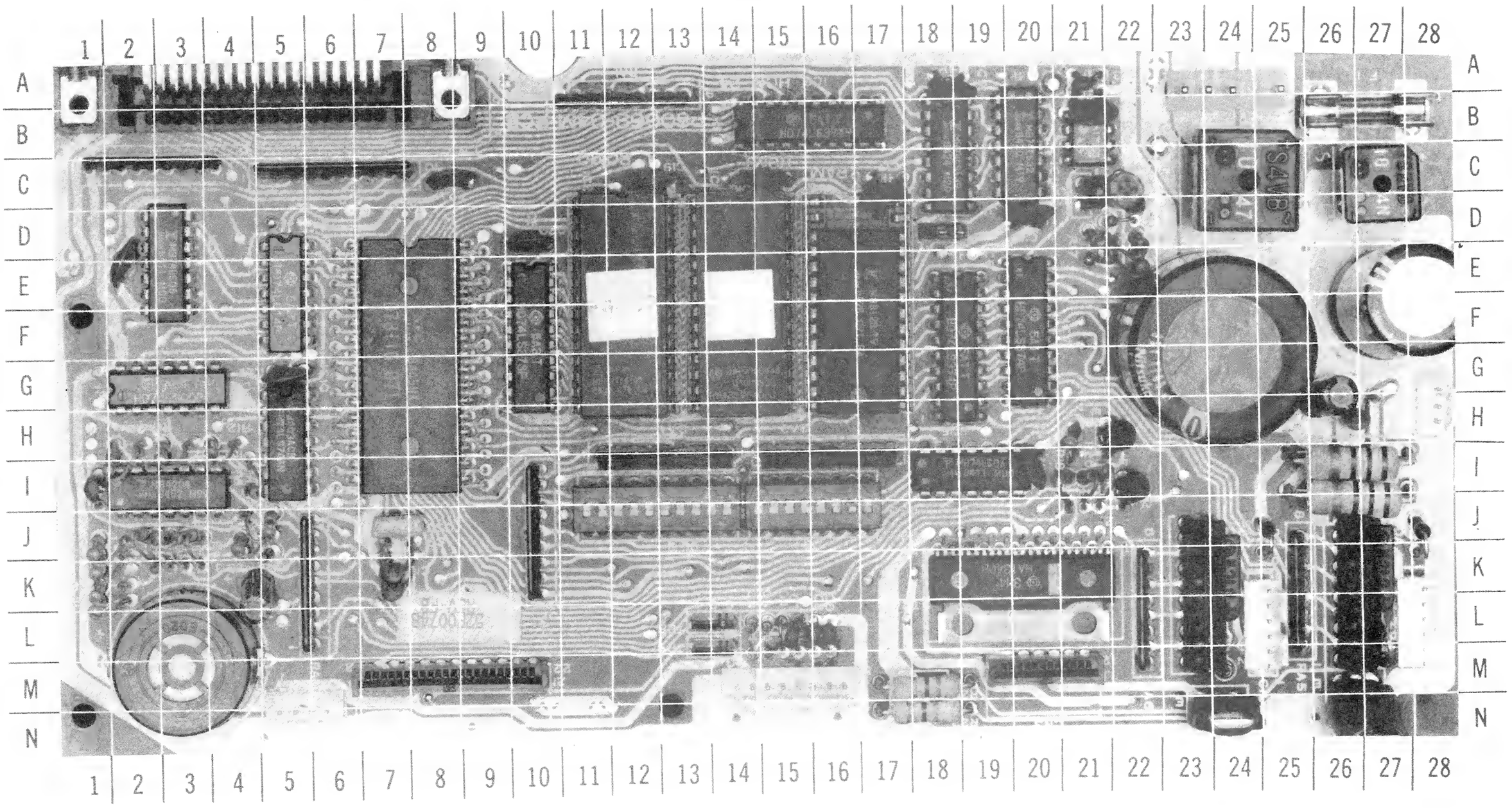
WITH CIRCUITRACE™



NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED



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MAIN BOARD

A Howord W. Soms GRIDTRACE™ Photo

6

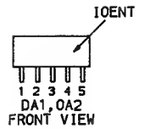
MAIN BOARD

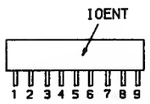
23

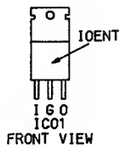
GridTrace LOCATION GUIDE

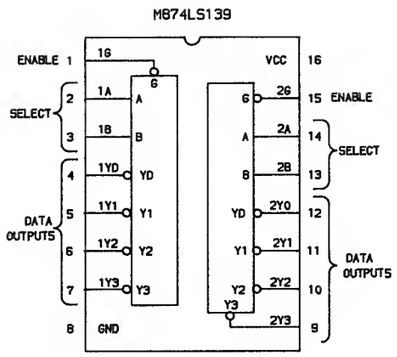
A	D-2
B	D-2
BZ	M-3
C	D-6
C1	G-24
C2	F-28
C3	H-26
C4	K-4
C5	C-21
C6	L-16
C7	L-15
C8	L-16
C9	K-7
C10	K-7
C11	H-26
C12	I-1
C13	A-21
C14	B-21
C15	D-20
C16	A-18
C17	C-17
C18	C-15
C19	C-12
C20	D-10
C21	C-8
C22	G-5
C23	D-2
C24	I-20
CK1	A-21
CK2	C-23
CN1	A-3
CN2	M-8
CN3	M-20
CN4	L-25
CN5	L-28
CN6	N-5
CN7	A-25
CN8	A-25
CN9	H-28
D	D-6
D1	J-28
D2	J-25
D3	L-14
D4	L-15
D5	L-14
D6	C-24
D7	C-27
D8	D-22
DA1	K-27
DA2	K-24
DA3	I-16
DA4	I-12
DS1	J-16
DS2	J-13
E	H-1
F	H-1
F1	B-7
G	D-8
H	L-5
IC1 (U1)	E-8
IC2 (U2)	D-12
IC3 (U3)	D-14
IC4 (U4)	E-16
IC5 (U5)	F-10
IC6 (U6)	F-19
IC7 (U7)	E-20
IC8 (U8)	B-15
IC9 (U9)	B-18
IC10 (U10)	H-5
IC11 (U11)	B-20
IC12 (U12)	E-5
IC13 (U13)	G-2
IC14 (U14)	D-3
IC15 (U15)	I-18
IC16 (U16)	B-21
IC17 (U17)	I-2
J1	D-18
R1	J-1
R2	J-4
R3	K-1
R4	J-2
R5	J-2
R6	J-3
R7	H-2
R8	K-1
R9	K-1
R10	J-3
R11	H-3
R12	H-4
R13	I-4
R14	J-14
R15	E-22
R16	D-22
R17	D-21
R18	I-21
R19	H-21
R20	I-21
R21	I-21
R22	N-18
R23	I-26
R24	J-27
R25	M-18
RA1	A-11
RA2	C-2
RA3	J-10
RA4	K-5
RA5	L-25
RA6	L-22
RCA1	C-6
TR (Q1)	H-22
TR2 (Q2)	I-22
TR3 (Q3)	N-27
TR4 (Q4)	N-21
TR5 (Q5)	L-13
TR6 (Q6	L-13
TRA1 (U18)	K-21
TRA2 (U20)	L-26
TRA3 (U19)	L-23
VR2	C-22
X1	J-7
ZD1	M-27
ZD2	M-24
ZD3	J-5

IC PINOUTS & TERMINAL GUIDES

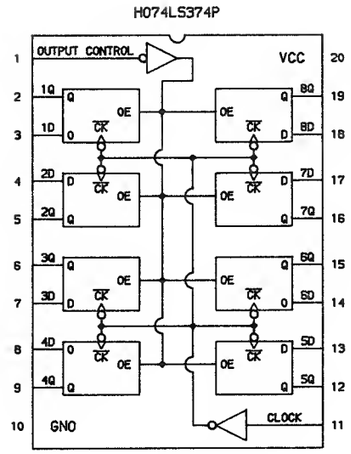




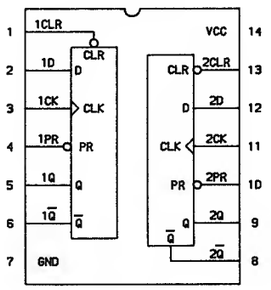




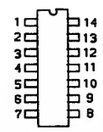
IC9
OECOOER
TOP VIEW



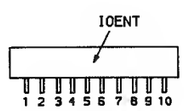
IC6, IC7, IC8
FLIP/FLOP
TOP VIEW

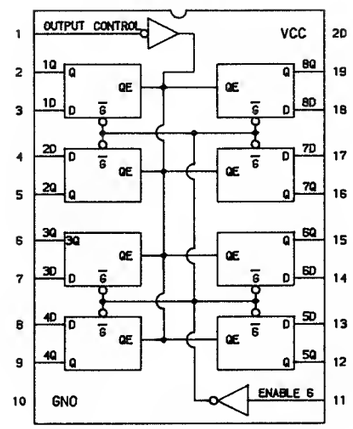


IC10
FLIP/FLOP
TOP VIEW

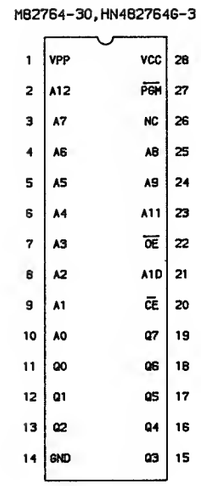


IC11 THRU IC15, IC17
TOP VIEW

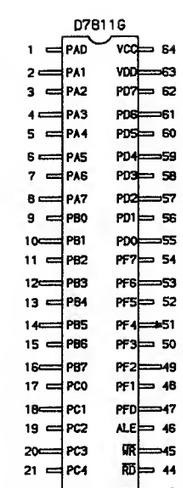




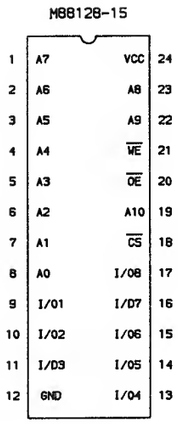
IC5
LATCH
TOP VIEW



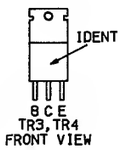
IC2, IC3
ROM
TOP VIEW

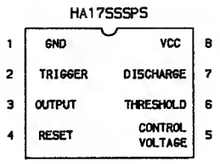


IC1
CPU
TOP VIEW

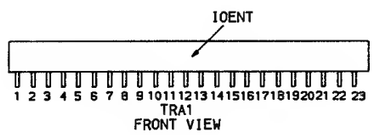


IC4
RAM
TOP VIEW





IC16
TIMER
TOP VIEW



LINE DEFINITIONS

A0 THRU A15 ..... Address Bits Thru 15
ACK ..... Acknowledge Input Data Received
AD0 THRU AD7 ..... Data Bits 0 Thru 7
AFD ..... Enables Parallel Port
AN0 THRU AN7 ..... Analog Inputs 0 Thru 7
BUSY ..... Busy, Off Line, Data Entry, Paper Fed, Printing
CRH ..... Carriage Motor Enable
CTS ..... Clear to Send
DATA 1 THRU DATA 8 ..... Data Bits 1 Thru 8, Parallel
DSR ..... Data Set Ready
ERR ..... Error, Off-Line, Paper End, Motor Problems
INT ..... Interrupt
INT1 ..... Interrupt Request
LFH ..... Line Feed Motor Enable
PE ..... Parallel Enable
PS ..... Paper Empty Sensor
RD ..... Read Data
RES ..... Reset
RXD ..... Received Data, Acknowledge
S0 THRU S3 ..... Dip Switch Settings
SC,SD,SE ..... Chip Select Lines
SEL ..... Select
SEL IN ..... Selected Input
STROBE ..... Strobe Pulse For Read In Data
TXD ..... Transmitted Data
UL ..... Underline Text
WR ..... Write, Data Bus Info Stored In Memory or I/O

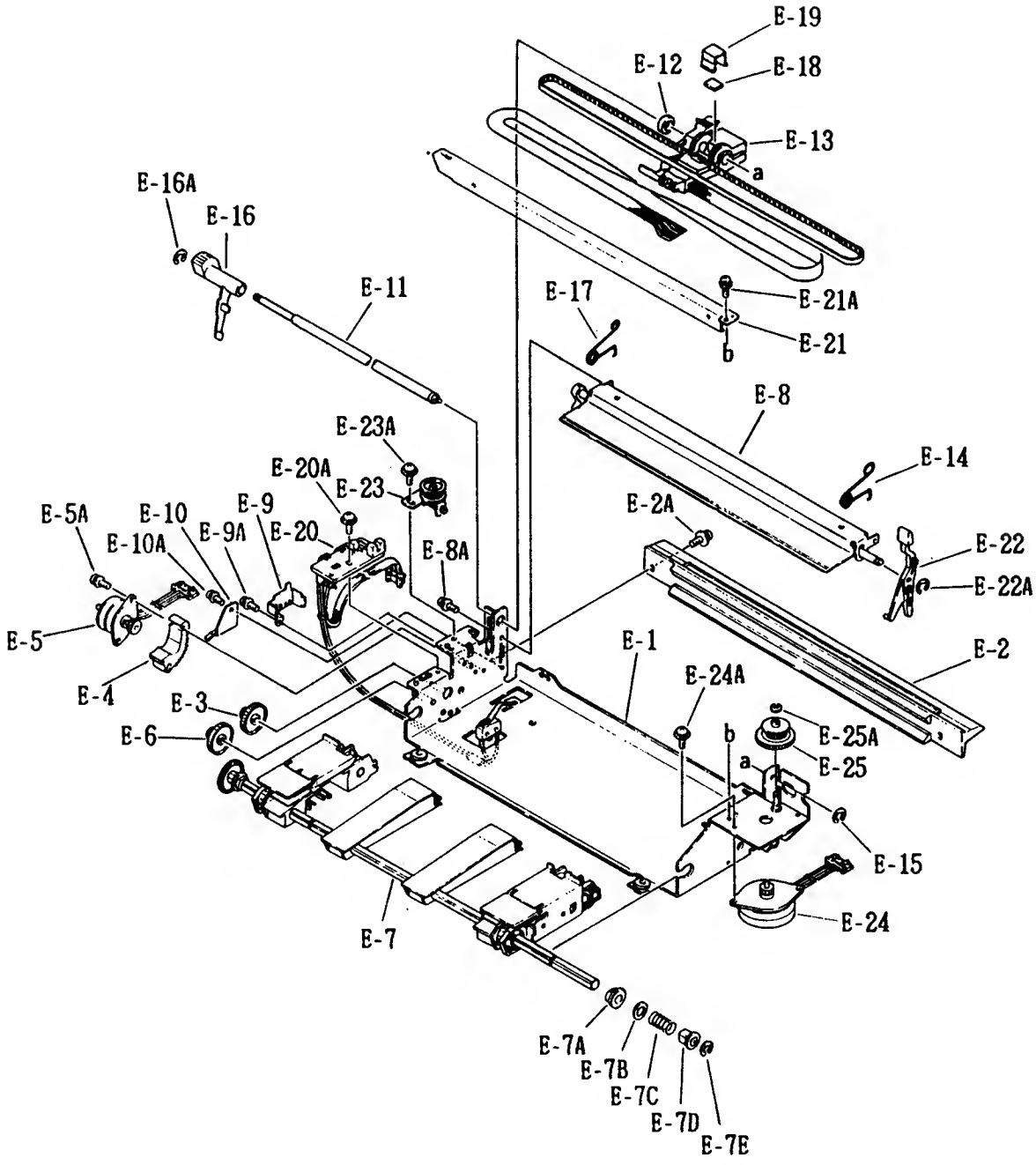
SAFETY PRECAUTIONS

1. Use an isolation transformer for servicing.
2. Maintain AC line voltage at rated input.
3. Remove AC power from the Printer before servicing or installing electrostatically sensitive devices. Examples of typical ES devices are integrated circuits and semiconductor "chip" components.
4. Use extreme caution when handling the printed circuit boards. Some semiconductor devices can be damaged easily by static electricity. Drain off any electrostatic charge on your body by touching a known earth ground. Wear a commercially available discharging wrist strap device. This should be removed prior to applying power to the unit under test.
5. Use a grounded-tip, low voltage soldering iron.
6. Use an isolation (times 10) probe on scope.
7. Do not remove or install board, mechanical or electrical parts, or other peripherals with Printer AC power On.
8. Do not use freon-propelled sprays. These can generate electrical charges sufficient to damage semiconductor devices.
9. This Printer is equipped with a grounded three-pronged AC plug. This plug must fit into a grounded AC power outlet. Do not defeat the AC plug safety feature.
10. Periodically examine the AC power cord for damaged or cracked insulation.
11. The Printer cabinet is equipped with vents to prevent heat build-up. Never block, cover, or obstruct these vents.
12. Instructions should be given, especially to children, that objects should not be dropped or pushed into the vents of the cabinet. This could cause shock or equipment damage.
13. Never expose the Printer to water. If exposed to water turn the unit Off. Do not place the Printer near possible water sources.
14. Never leave the Printer unattended or plugged into the AC outlet for long periods of time. Remove AC plug from AC outlet during lightning storms.
15. Do not allow anything to rest on AC power cord.
16. Unplug AC power cord from outlet before cleaning Printer.
17. Never use liquids or aerosols directly on the Printer. Spray on cloth and then apply to the Printer cabinet. Make sure the Printer is disconnected from the AC power line.

Mechanical Unit

Function

This Unit consists of Base Ass'y, Tractor Ass'y, Sub Frame Ass'y, Carriage Ass'y, etc ···· .



Ref. No.	Description	Manufacture Part No.
E-1	Base Ass'y	SP1000A11
E-2	Set, Platen	P20014A
E-2A	Screw M3 × L8 + SW + WL	P30A30087A
E-3	LF Gear	P18042

Courtesy of Manufacturer

Ref. No.	Description	Manufacture Part No.
E-4	LF Heat Sink	P25025-02
E-5	Set, LF Motor	P90008A01
E-5A	Screw M3 × L18 + SW + WS	P30A3018Z5
E-6	LF Gear	P18042
E-7	Tractor Ass'y	SP1000A04
E-7A	Bush	P23016
E-7B	Poly Slider	P23022
E-7C	LF Spring	P22059-01
E-7D	LF Collar	P16115
E-7E	E ring E-6	P34E60Z
E-8	Sub Frame Ass'y	SP1000A05
E-8A	Screw M3 × L6 + SW + WS	P30A3006Z5
E-9	Clip Plate	P14046-01
E-9A	Screw M3 × L6 + SW + WS	P30A3006Z5
E-10	Plate L	P14180
E-10A	Screw M3 × L6 + SW + WS	P30A3006Z5
E-11	Set, CR Shaft	P15046A
E-12	Felt Ring	P47016
E-13	Carriage Ass'y	SP1000A07
E-14	CR Spring.R	P22061-03
E-15	E ring E-4	P34E40Z
E-16	Gap Lever	P14134
E-16A	E ring E-6	P34E60Z
E-17	CR Spring L	P22060-03
E-18	Upper Felt	P47020
E-19	Upper SP	P22063
E-20	Sensor Ass'y	SP1000A10
E-20A	Screw M3 × L6 + SW + WL	P30A3006Z4
E-21	Set, Guide Frame	P12023A01
E-21A	Screw M3 × L6 + SW + WL	P30A3006Z4
E-22	Release Lever	P14132
E-22A	E ring E-3	P34E30Z
E-23	Pulley Ass'y	SP1000A12
E-23A	Screw M3 × L6 + SW + WS	P30A3006Z4
E-24	Set, CR Motor	P90011A
E-24A	Screw M2.6 × L6 + SW + WS	P30A2606Z5
E-25	Set, CR Gear	P18041A
E-25A	E ring E-2	P34E20Z

PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	RCA PART No.	ZENITH PART No.	NOTES
D1,2	S5277B	NTE116	ECG116	SK3311	212-76-02	
	P62X011	NTE116	ECG116	SK3311	212-76-02	
D3,4,5	1S1555	NTE177	ECG177	SK9091/177	103-131	
	1S1588	NTE519	ECG519	SK3100/519	103-131	
	P62D1S1588	NTE519	ECG519	SK3100/519	103-131	
D6	S4VB10	NTE5312	ECG5312	SK3985/5312		
	S4VB-10-1	NTE5312	ECG5312	SK3985/5312		
	P62X045	NTE5312	ECG5312	SK3985/5312		
D7	S2VB10	NTE5312	ECG5312	SK3985/5312		
	S2VB-10-1	NTE5312	ECG5312	SK3985/5312		
	P62X046	NTE5312	ECG5312	SK3985/5312		
D8	1S1555	NTE177	ECG177	SK9091/177	103-131	
	1S1588	NTE519	ECG519	SK3100/519	103-131	
	P62D1S1588	NTE519	ECG519	SK3100/519	103-131	
DA1,2	D1CA					
	P62X005					
DA3,4	DAN801					
	P62X010					
IC01	HA17805	NTE960	ECG960	SK3591/960	221-Z9043	
IC1	D7811G					
	UPD7811G					
	P61CP7811N					
	[uPD7811G]					
IC2	MBM2764-30	NTE2764(12)	ECG2764(12)			
	2764-30	NTE2764(12)	ECG2764(12)			
	P0551	NTE2764(12)	ECG2764(12)			
	2764	NTE2764(12)	ECG2764(12)			
	27128					

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	RCA PART No.	ZENITH PART No.	NOTES
IC3	HN482764G-3	NTE2764(12)	ECG2764(12)			
	2764-30	NTE2764(12)	ECG2764(12)			
	P0561	NTE2764(12)	ECG2764(12)			
	2764	NTE2764(12)	ECG2764(12)			
	27128					
IC4	MB8128-15	NTE2128	ECG2128			
	HM6116	NTE2128	ECG2128			
	P61AM6116H	NTE2128	ECG2128			
IC5	HD74LS373P	NTE74LS373	ECG74LS373	SK74LS373	HE-443-867	
	74LS373	NTE74LS373	ECG74LS373	SK74LS373	HE-443-867	
	LS373	NTE74LS373	ECG74LS373	SK74LS373	HE-443-867	
	P61LS373*H	NTE74LS373	ECG74LS373	SK74LS373	HE-443-867	
IC6,7,8	HD74LS374P	NTE74LS374	ECG74LS374	SK7CT374	HE-443-863	
	74LS374	NTE74LS374	ECG74LS374	SK7CT374	HE-443-863	
	LS374	NTE74LS374	ECG74LS374	SK7CT374	HE-443-863	
	P61LS374*H	NTE74LS374	ECG74LS374	SK7CT374	HE-443-863	
IC9	MB74LS139	NTE74LS139	ECG74LS139	SK74LS139	HE-443-822	
	74LS139	NTE74LS139	ECG74LS139	SK74LS139	HE-443-822	
	LS139	NTE74LS139	ECG74LS139	SK74LS139	HE-443-822	
	P61LS139*H	NTE74LS139	ECG74LS139	SK74LS139	HE-443-822	
IC10	SN74LS74AN	NTE74LS74A	ECG74LS74A	SK74LS74A	HE-443-730	
	74LS74	NTE74LS74A	ECG74LS74A	SK74LS74A	HE-443-730	
	LS74	NTE74LS74A	ECG74LS74A	SK74LS74A	HE-443-730	
	P61LS74**H	NTE74LS74A	ECG74LS74A	SK74LS74A	HE-443-730	
IC11	MB74LS32	NTE74LS32	ECG74LS32	SK74LS32	HE-443-875	
	74LS32	NTE74LS32	ECG74LS32	SK74LS32	HE-443-875	
	LS32	NTE74LS32	ECG74LS32	SK74LS32	HE-443-875	
	P61LS32**H	NTE74LS32	ECG74LS32	SK74LS32	HE-443-875	

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	RCA PART No.	ZENITH PART No.	NOTES
IC12	HD74LS14P	NTE74LS14	ECG74LS14	SK74LS14	HE-443-872	
	74LS14	NTE74LS14	ECG74LS14	SK74LS14	HE-443-872	
	LS14	NTE74LS14	ECG74LS14	SK74LS14	HE-443-872	
	P61LS14**H	NTE74LS14	ECG74LS14	SK74LS14	HE-443-872	
IC13	HD74LS00P	NTE74LS00	ECG74LS00	SK74LS00	HE-443-728	
	74LS00	NTE74LS00	ECG74LS00	SK74LS00	HE-443-728	
	LS00	NTE74LS00	ECG74LS00	SK74LS00	HE-443-728	
	P61LS00**H	NTE74LS00	ECG74LS00	SK74LS00	HE-443-728	
IC14,15	MB74LS06					
	74LS06					
	LS06					
	P61LS06**H					
IC16	HA17555PS	NTE955M	ECG955M	SK3564/955M	221-Z9042	
	HA17555	NTE955M	ECG955M	SK3564/955M	221-Z9042	
	P61XX0002	NTE955M	ECG955M	SK3564/955M	221-Z9042	
	TL1555P	NTE955M	ECG955M	SK3564/955M	221-Z9042	
IC17	MB4204	NTE834	ECG834	SK3569/834	221-121	
	LM339	NTE834	ECG834	SK3569/834	221-121	
	P61XX0027	NTE834	ECG834	SK3569/834	221-121	
TR1,2	2SA1015Y	NTE290A	ECG290A	SK9132	121-Z9003*	
	2SA1015-Y	NTE290A	ECG290A	SK9132	121-Z9003*	
	P62X020	NTE290A	ECG290A	SK9132	121-Z9003*	
TR3,4	2SB920					
	P62T2B920					
TR5,6	DTA114K					
	DTA114F					
	P62X050					

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

SEMICONDUCTORS (Select replacement for best results)

ITEM No.	MFGR. PART No./ TYPE No.	NTE PART No.	ECG PART No.	RCA PART No.	ZENITH PART No.	NOTES
TRA1	HA13408					
	P61XX0026					
TRA2,3	TH3L10					
	P62X018					
ZD1,2	RD27F	NTE146A	ECG146A	SK27V/146A	103-Z9014	
	P62X048	NTE146A	ECG146A	SK27V/146A	103-Z9014	
ZD3	RD3.3EB	NTE5005A	ECG5005A	SK3A3/5005A		
	05Z3.3XLC-5	NTE5005A	ECG5005A	SK3A3/5005A		
	P62X049	NTE5005A	ECG5005A	SK3A3/5005A		

* Lead configuration may vary from original.
(12) Programming required.

PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description

CAPACITORS

ITEM No.	RATING	MFGR. PART No.
	NF PCB	
C1	.047 250VAC	P66X024
C2	.047 250VAC	P66X024

ITEM No.	RATING	MFGR. PART No.
	MAIN PCB	
C9	22 N750 50V 10%	P66C5220KT
C10	22 N750 50V 10%	P66C5220KT

RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFGR. PART No.	NTE PART No.	WORKMAN PART No.
RA1	Resistor Network	P63X077 (1)		
RA2	Resistor Network	P63X077 (1)		
RA3	Resistor Network	P63X077 (1)		
RA4	Resistor Network	P63X077 (1)		
RA5	Resistor Network	P63X086 (2)		
RA6	Resistor Network	P63X086 (2)		

(1) 4700 5% x 8
(2) 620 5% x 4

CONTROLS (All wattages 1/2 watt, or less, unless listed)

ITEM NO.	FUNCTION	RESISTANCE	MFGR. PART NO.	NOTES
VR2	Pulse Adjust	68K	P64007	

COILS & TRANSFORMERS

ITEM No.	FUNCTION	MFGR. PART No.	OTHER IDENTIFICATION	NOTES
L1	Line Filter	P93012		
T1	Power	P80020		

FUSE DEVICES

ITEM NO.	DESCRIPTION	MFGR. PART NO.		NOTES
		DEVICE	HOLDER	
F1	.6A @ 250VAC Slow Blow	P73017	P73053 (1)	
	MAIN PCB			
F1	2 Amp @ 250VAC Fast Acting	P73018	P73054 (1)	

(1) Two used for each fuse.

PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

MISCELLANEOUS

ITEM No.	PART NAME	MFGR. PART No.	NOTES
BZ	Buzzer	P85001	
D1	LED	P83004	Power, Green
Dw	LED	P83003	Paper Empty, Red
D3	LED	P83004	Select, Green
DS1	DIP Switch	P87119	
DS2	DIP Switch	P87116	
M1	Sensor		Home Position
M2	Motor	P90008A01	Line Feed
M3	Motor	P90011A	Carriage
M4	Head	AWD9051	Print
P1	AC Power Cord		
S1	Switch	P87010	Select
S2	Switch	P87010	Form Feed
S3	Switch	P87010	Line Feed
S4	Switch		Power
S5	Switch		Paper Empty
X1	Crystal	P67005	11MHz
	PC Board	SP1004A15	Main

CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.
Cabinet Top	P10104A
Cabinet Bottom	SP1016U04

ITEM	PART No.
Knob, Paper Feed	P27016
Paper Cover, Clear	P10103

WIRING DATA

Shielded Hook-up Wire ..... Use BELDEN No. 8401 or 8421 (Single-Conductor)
8208 (Two-Conductor)
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8529 (Solid) Available in 13 Colors
8522 (Stranded) Available in 13 Colors

TEST EQUIPMENT

Test Equipment listed by Manufacturer illustrates typical or equivalent equipment used by SAMS' Engineers to obtain measurements and is compatible with most types used by field service technicians.

TEST EQUIPMENT (COMPUTERFACTS)

Equipment	B & K Precision Equipment No.	Sencore Equipment No.	Notes
OSCILLOSCOPE	1570A,1590A,1596	SC61	
LOGIC PROBE	DP51,DP21		
LOGIC PULSER	DP101,DP31		
DIGITAL VOM	2830,2806	DVM37,DVM56,SC61	
ANALOG VOM	277,111,116		
ISOLATION TRANSFORMER	TR110,1604,1653,1655	PR57	
FREQUENCY COUNTER	1803,1805	FC71,SC61	
COLOR BAR GENERATOR	1211A,1251,1260,1249	CG25,VA62	
RGB GENERATOR	1260,1249		
FUNCTION GENERATOR	3020,3011,3030		
HI-VOLTAGE PROBE VOM/DMM Accessory probes	HV-44 PR-28(HV)	HP200	
TEMPERATURE PROBE	TP-28,TP-30		
CRT ANALYZER	467,470	CR70	
DIGITAL IC TESTER	560,550,552		
CAPACITANCE ANALYZER		LC53,LC75,LC76 LC77	
INDUCTANCE ANALYZER		LC53,LC75,LC76 LC77	

TROUBLESHOOTING

POWER SUPPLY

Apply 120VAC power and turn Power Switch (S4) On. If power indicator is Off and Printer is dead, check for 120VAC between pins 1 and 3 of Connector CN1. If 120VAC is missing, check Power Switch (S4), AC Fuse (F1), Noise Filter (L1) and AC Line Cord (P1). If the 120VAC is present, check for 16.8VAC between pins 1 and 3 and 10.2VAC between pins 4 and 5 of Connector CN8. If AC voltages are not present, check Power Transformer (T1). If AC voltages are present, check for 22.2V at the cathode of Diode D6 and 11V at the cathode of Diode D7. If 11V is missing, check AC Fuse (F2), Diode D7 and Regulator IC (IC01). If 11V is present, check for 5V at pin 3 of CN9. If 5V is missing, check Connector CN9 for good connection, and check IC01 by substitution.

SELF-TEST

Press Power Switch and Line Feed (LF) button at the same time. The Printer will function in self-test mode and keep printing characters until Power Switch is turned Off. If the self-test does not operate properly, check ROM IC's (IC2 and IC3) by substitution.

CPU OPERATION

Check for 5.0V at pins 42, 43, 63 and 64 of the CPU (IC1). If the 5.0V is missing, refer to the "Power Supply" section of this troubleshooting guide. To verify clock oscillator is functioning, check waveforms at pins 30 and 31 (IC1). If waveforms are missing, check capacitors C9 and C10 and Crystal X1.

LINE FEED MOTOR MALFUNCTIONING

Check gear assembly on right side of Printer. Check Line Feed Motor (M2). Disconnect Connector CN4 and check for 49 ohms between pins 3 and 5, pins 4 and 6, pins 1 and 5, and pins 2 and 6. If Line Feed Motor is good, check Switch Transistor (Q4), Driver IC (TRA3), Flip/Flop (IC7) and Inverter (IC15).

PRINT HEAD

The print head is moving back and forth but not printing. Check for 22.2V at pins 6 and 7 of Connector CN3. If 22.2V is missing, refer to the "Power Supply" section of this troubleshooting guide. If the 22.2V is present, perform Self-Test and check for pulses at pins 1, 3, 7, 9, 11, 17, 21 and 23 of Driver IC (TRA1). If pulses are not present, check voltage on pin 2 of TRA1 while Printer is in Self-Test, the voltage should vary between 0V and 2.8V. If voltage does not vary, check Timer Output Transistors (TR1 and TR2). Check waveform at CK1, if waveform is present, check IC15 by substitution. If pulses are present at pins 1, 3, 7, 9, 11, 17,21 and 23 of Driver

TROUBLESHOOTING (Continued)

IC (TRA1), check resistance of each Print Head Solenoid. Check for 18.5 ohm between pin 6 and pins 2 thru 12 of Connector CN3. If waveform at CK1 is not present, check Timer (IC16).

PRINTER WILL NOT PRINT IN ON-LINE MODE

(WILL NOT RECEIVE DATA)

Check connector cable between Printer and Host Computer. Confirm that the SEL button will change status of Printer. When Printer is On-Line, the SEL LED should be On. If the SEL button does not operate, check the voltage at pin 6 of Connector CN7, the voltage should measure 4.8V and change to 0V when the SEL button is pressed. The voltage at pin 3 of CN3 should measure 4.9V when the SEL LED is On and change to 0V when the SEL LED is turned Off. If the SEL LED does not change status, check the logic reading on pin 3 of the CPU (IC1), the reading should be Low when Printer is On-Line, High when Printer is Off-Line. If Printer is On-Line and will not receive data from Host Computer, check for a logic High on pin 4 of IC14.

MECHANICAL REMOVAL AND REPLACEMENT

PRINT HEAD REMOVAL

Remove ribbon cassette. Press Head cover down and pull the Head out of its socket. Reverse the procedure to replace Print Head.

CARRIAGE MOTOR REMOVAL

Disconnect Connector CN5. Remove two Phillips screws holding Carriage Motor. Remove Carriage Motor. Reverse procedure to replace Carriage Motor.

LINEFEED MOTOR REMOVAL

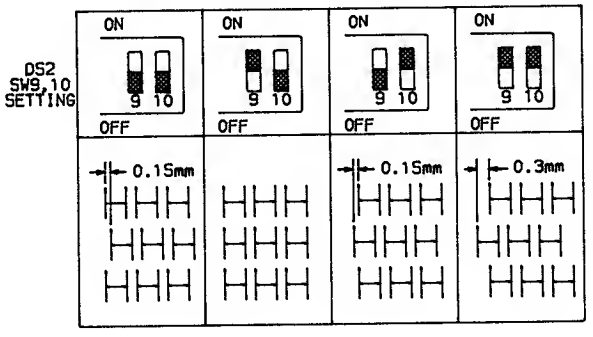
Disconnect Connector CN4. Remove two Phillips screws holding Linefeed Motor. Remove Linefeed motor. Reverse procedure to replace Linefeed motor.

PRINT HEAD AND PLATEN ADJUSTMENT

Remove ribbon cassette and Print Head. Pull out ribbon guide plate from Print Head. Mount Print Head without ribbon guide plate to carriage. Turn gap dial knob counterclockwise to lowest position. Move the carriage to center, check gap between Head and platen for 0.4mm, using a thickness gauge. Move carriage right and left and confirm that gap is same. If gap between Head and platen is not correct, loosen two Phillips screws holding platen to base assembly. Move platen up or down until gap is correct on both sides of the platen. After adjustment is accomplished, tighten screws, remove Print Head and remount ribbon guide on Head and install Head on carriage.

ALIGNMENT

Load Printer with paper. Connect Printer to a Computer. Fill screen of Monitor with the letter "H". Print out screen and measure the space from left edge of the letter "H" on two consecutive lines. If space is more than 0.5mm, remove vent screw and open vent. Set DIP Switches to align letters. See Figure below.

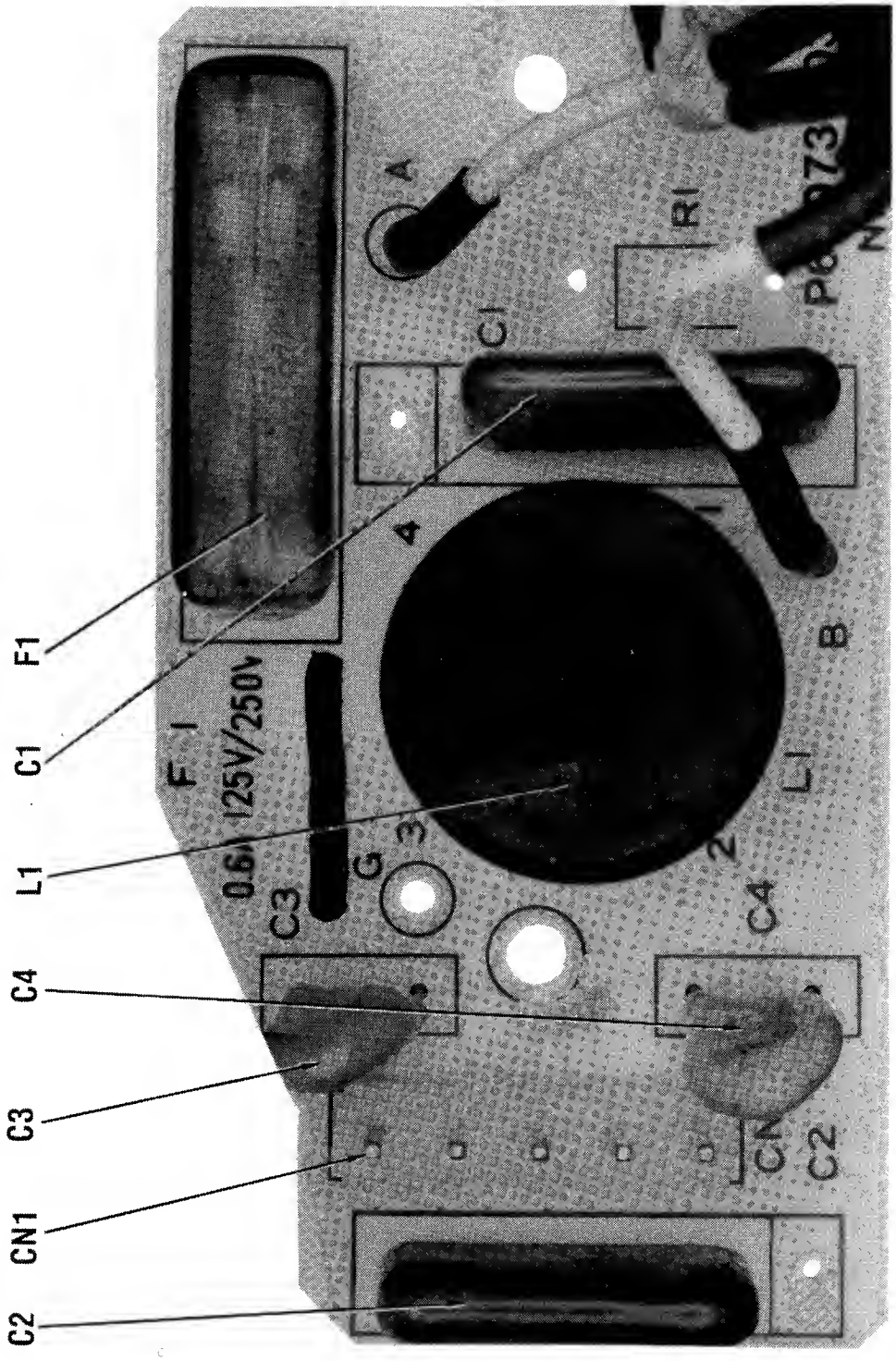


TIMING BELT TENSION ADJUSTMENT

Slide carriage assembly to center, load a weight of 50-60 gram on the center of the timing belt. The deflection should be 7mm. To adjust loosen left pulley holder screw and adjust tension screw beneath pulley for required tension. Tighten pulley holder screw.

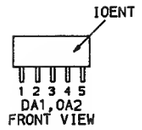
TIMING BELT REMOVAL

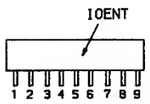
Remove left pulley holder screw and remove timing belt from both pulleys. Remove epoxy holding belt to carrriage assembly and remove belt.

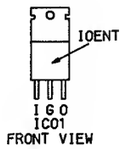


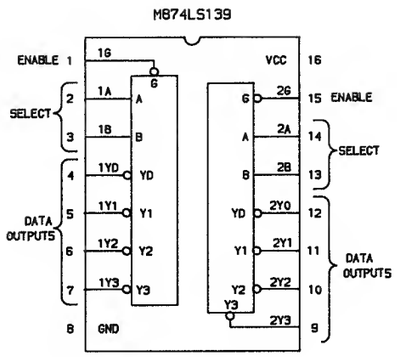
AC INPUT BOARD

IC PINOUTS & TERMINAL GUIDES

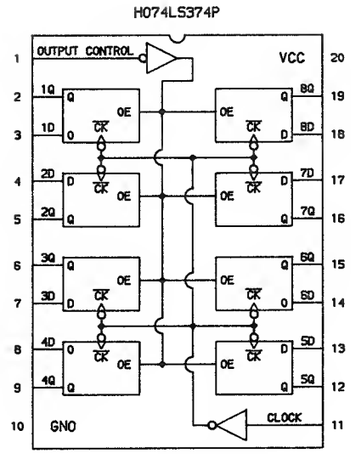




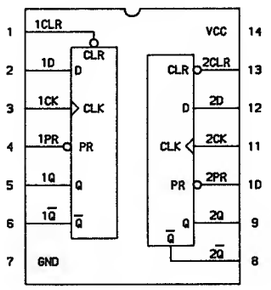




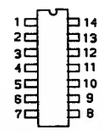
IC9
OECOOER
TOP VIEW



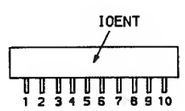
IC6, IC7, IC8
FLIP/FLOP
TOP VIEW

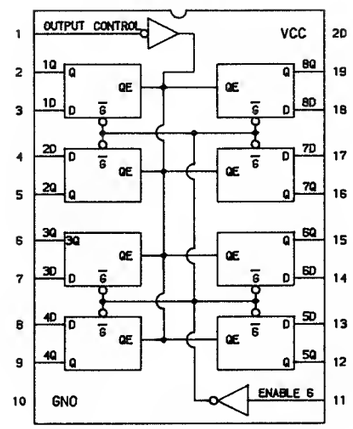


IC10
FLIP/FLOP
TOP VIEW

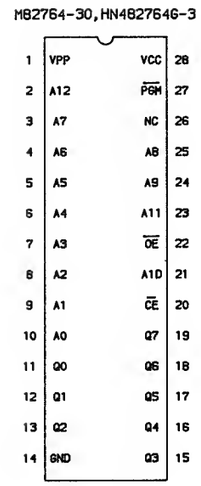


IC11 THRU IC15, IC17
TOP VIEW

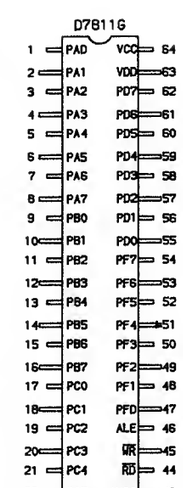




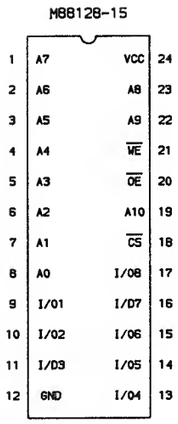
IC5
LATCH
TOP VIEW



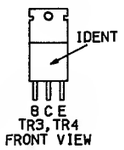
IC2, IC3
ROM
TOP VIEW

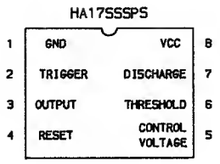


IC1
CPU
TOP VIEW

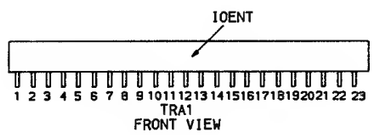


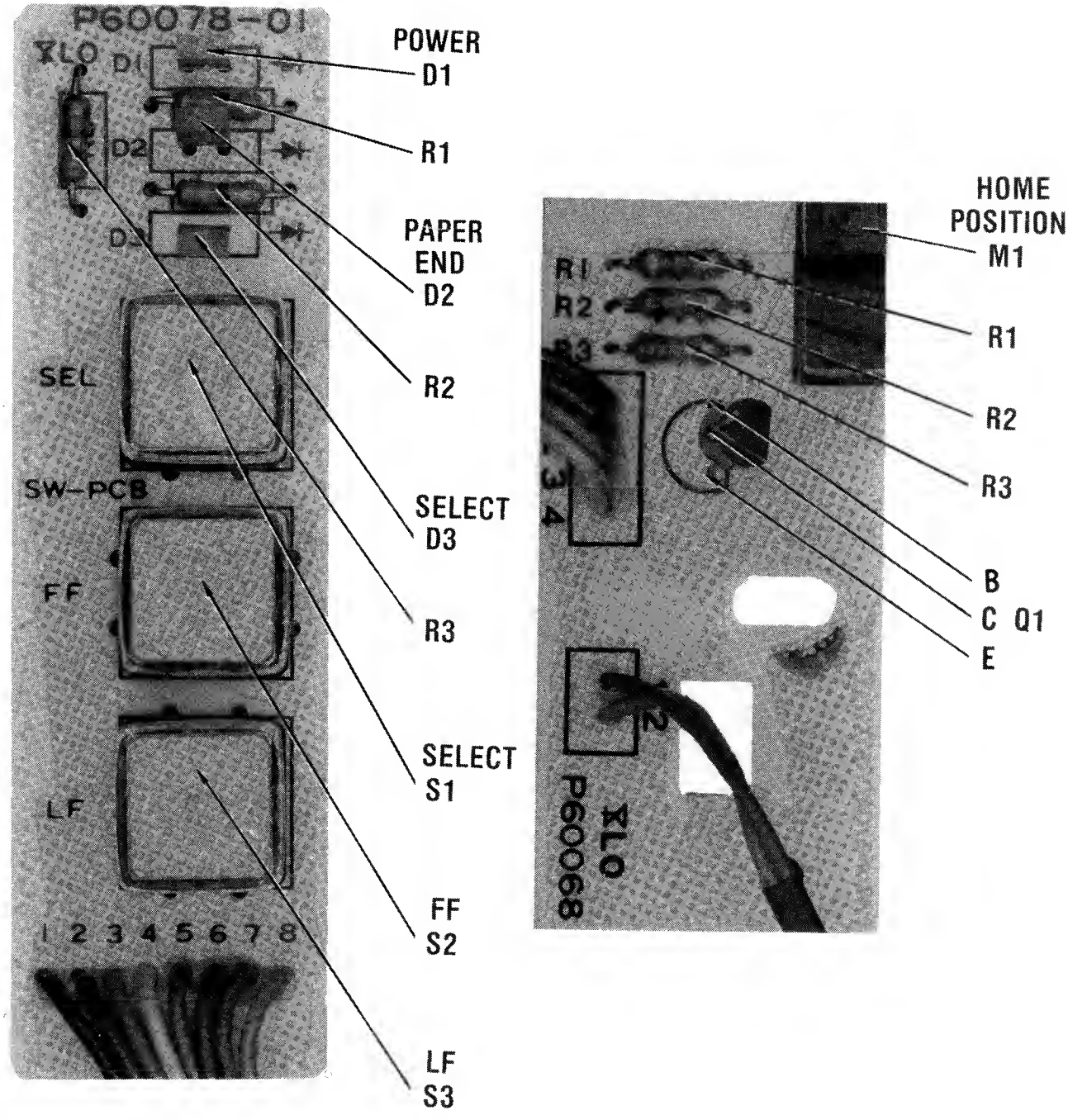
IC4
RAM
TOP VIEW





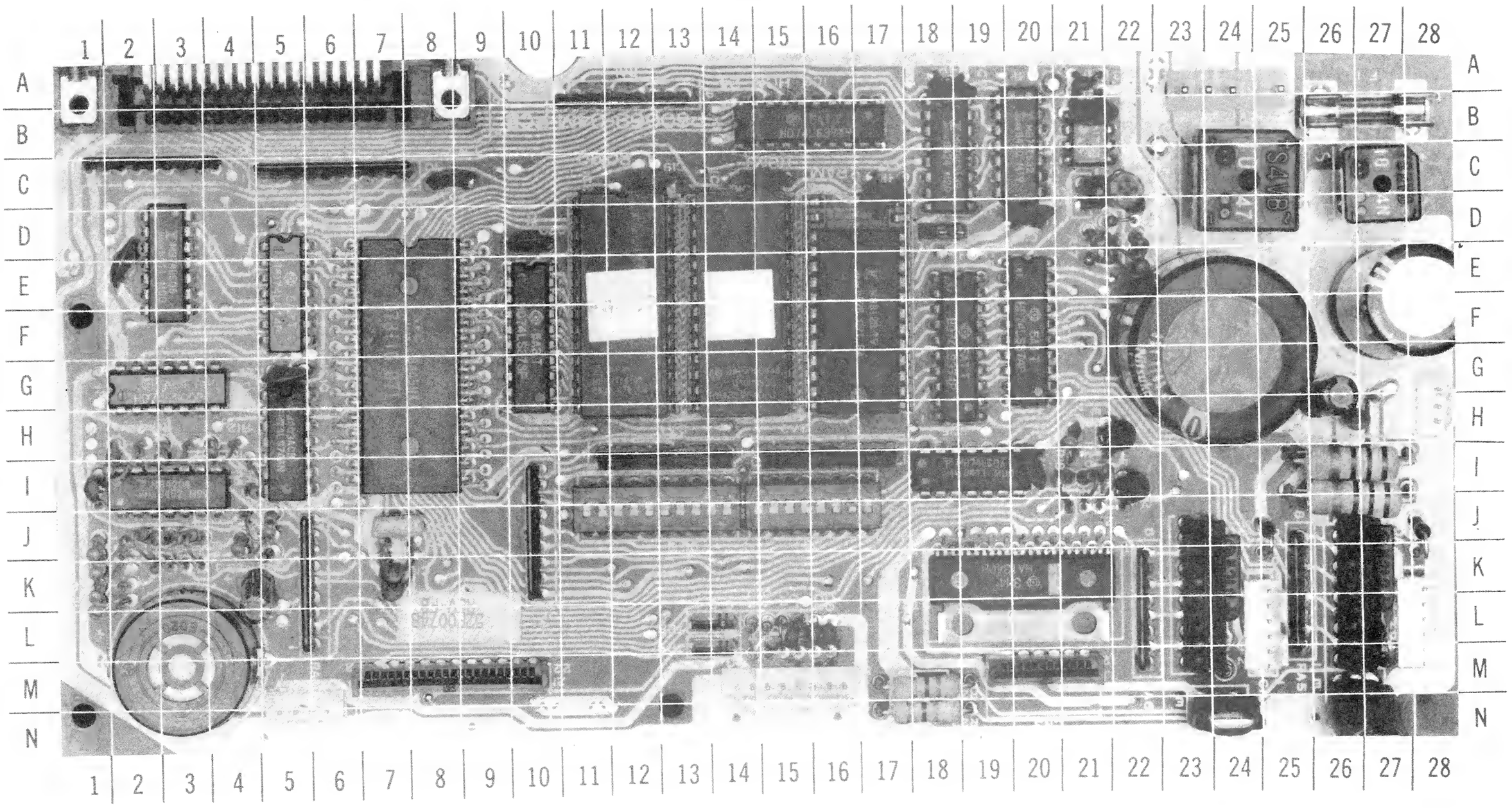
IC16
TIMER
TOP VIEW





CONTROL PANEL BOARD

SENSOR BOARD



C.Itoh
MODEL PROWRITER jr

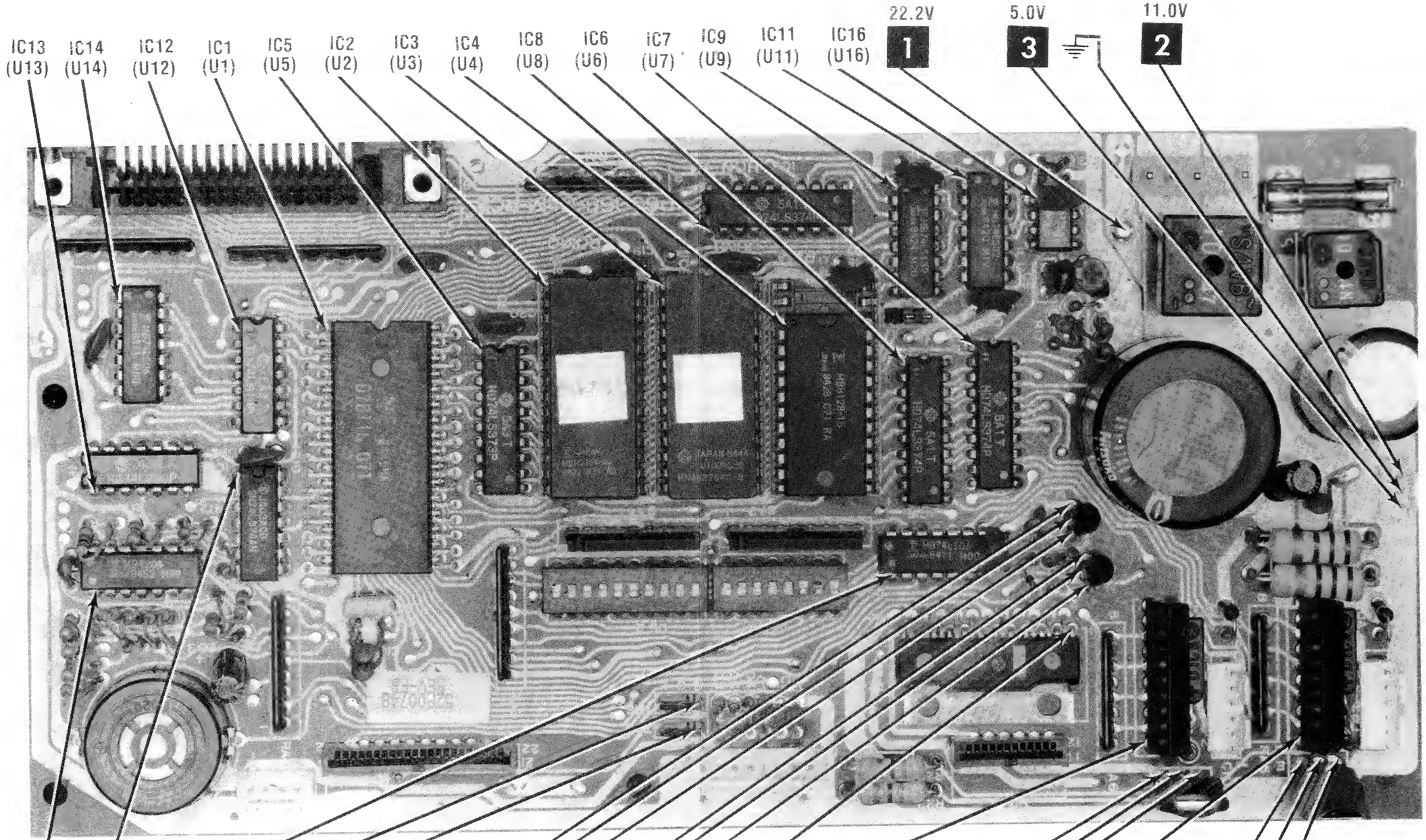
MAIN BOARD

A Howord W. Soms GRIDTRACE™ Photo

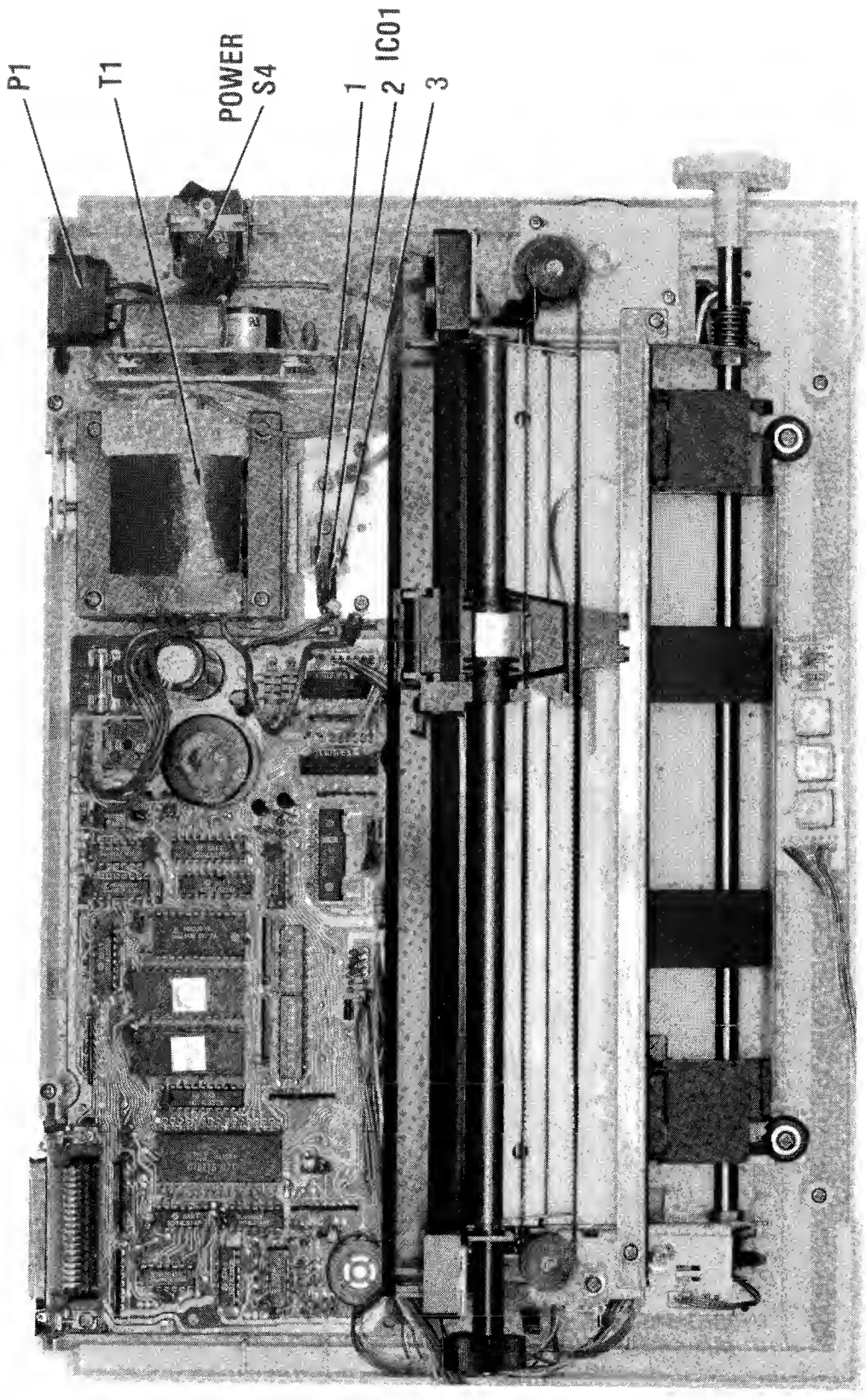
6

MAIN BOARD

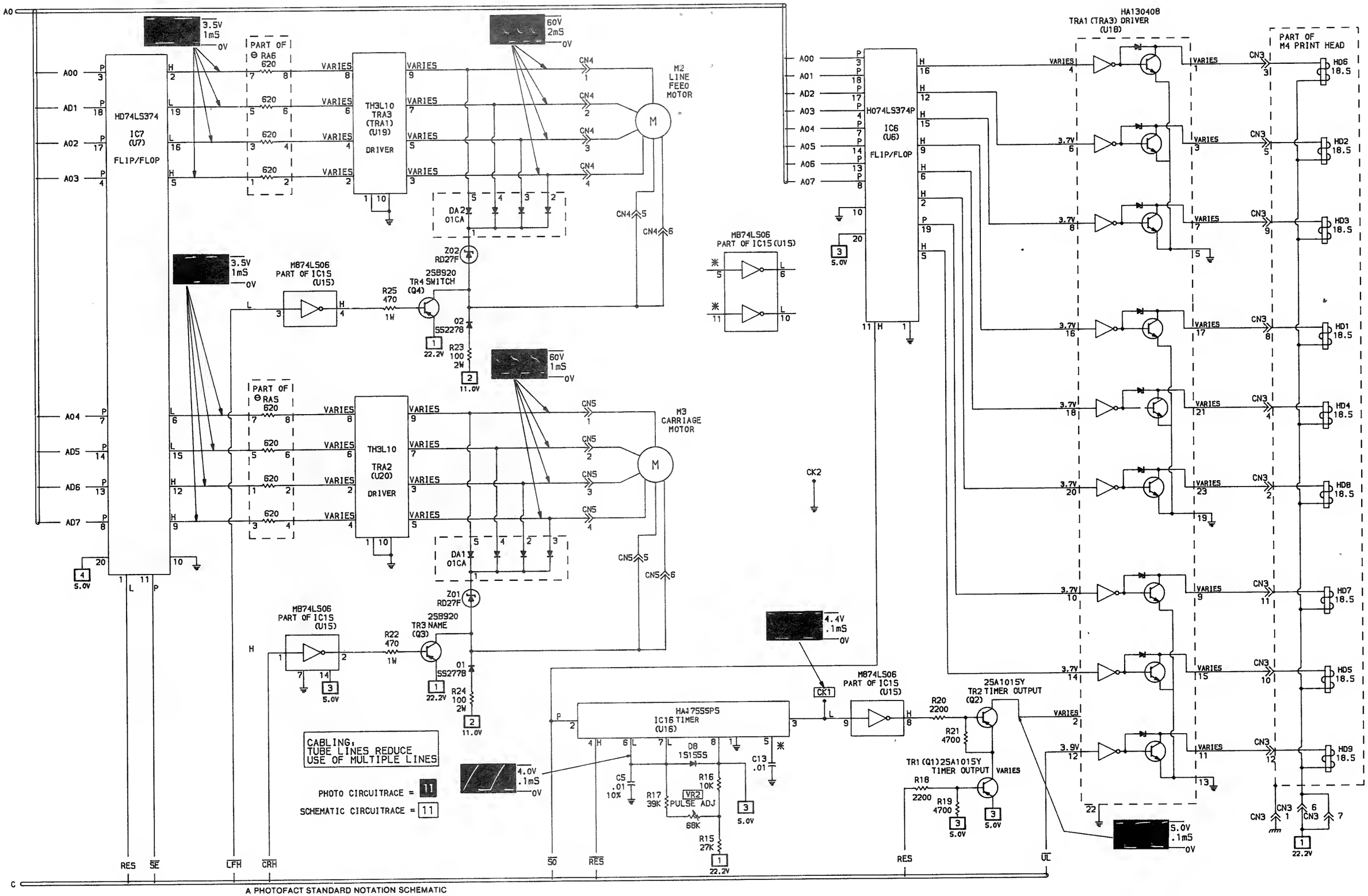
23



NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED



CHASSIS - OVERALL VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH CIRCUITRACE®

LOGIC CHART (Continued)

PIN NO.	IC U10	IC U11	IC U12	IC U13	IC U14	IC U15	IC U16	IC U17
1	H	P	H	H	*	H	L	H
2	H	P	L	H	L	L	P	L
3	L	L	L	L	H	L	L	H
4	H	P	H	H	L	H	H	H
5	L	P	H	L	L	*	*	*
6	H	P	L	H	H	L	L	*
7	L	L	L	L	L	L	L	H
8	L	P	L	L	H	H	H	*
9	H	P	H	H	L	L		H
10	*	P	L	H	L	L		L
11	*	H	H	H	H	*		*
12	*	H	H	H	L	H		L
13	*	H	L	L	H	L		H
14	H	H	H	H	H	H		H

SCHEMATIC NOTES

—x— Circuitry not used in some versions
- - - Circuitry used in some versions
⊖ See parts list
⏚ Ground

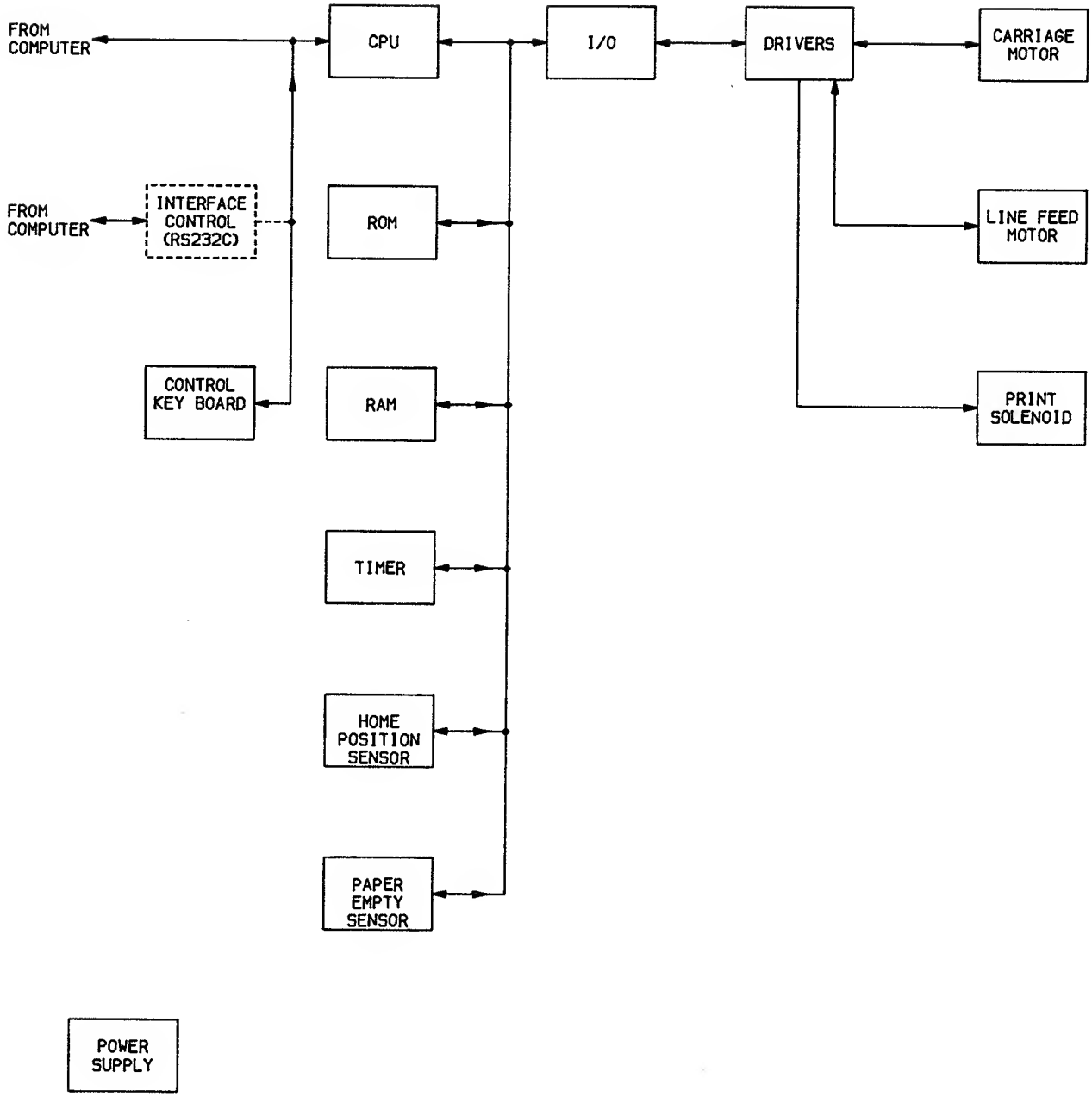
Voltages measured with digital meter.
Waveforms and voltages are taken from ground, unless noted otherwise.
Voltages, waveforms and logic readings taken with Printer running in Self-Test mode.
Waveforms taken with triggered scope and Sweep/Time switch in Calibrate position, scope input set for DC coupling on "0" reference voltage waveforms. Switch to AC input to view waveforms after DC reference is measured when necessary. Each waveform is 7.5cm width with DC reference voltage given at the bottom line of each waveform.
Item numbers in rectangles appear in the alignment/adjustment instructions.

Supply voltage maintained as shown at input.
Controls adjusted for normal operation.
Terminal identification may not be found on unit.
Capacitors are 50 volts or less, 5% unless noted.
Electrolytic capacitors are 50 volts or less, 20% unless noted.
Resistors are ½W or less, 5% unless noted.
Value in ( ) used in some versions.
Measurements taken with switching as shown, unless noted.
Logic Probe Display
L = Low
H = High
P = Pulse
* = Open (No lights On)

LOGIC CHART

PIN NO.	IC U1	PIN NO.	IC U1	PIN NO.	IC U1	PIN NO.	IC U1	PIN NO.	IC U2	PIN NO.	IC U2
1	H	17	H	33	L	49	P	1	H	15	P
2	H	18	*	34	H	50	P	2	P	16	P
3	H	19	H	35	H	51	P	3	P	17	P
4	H	20	L	36	H	52	P	4	P	18	P
5	H	21	L	37	H	53	P	5	P	19	P
6	H	22	L	38	H	54	P	6	P	20	P
7	*	23	H	39	H	55	P	7	P	21	P
8	*	24	H	40	H	56	P	8	P	22	P
9	H	25	H	41	H	57	P	9	P	23	P
10	H	26	L	42	H	58	P	10	P	24	P
11	H	27	P	43	H	59	P	11	P	25	P
12	L	28	H	44	P	60	P	12	P	26	P
13	H	29	L	45	P	61	P	13	P	27	H
14	L	30	P	46	P	62	P	14	L	28	H
15	H	31	P	47	P	63	H				
16	P	32	L	48	P	64	H				

PIN NO.	IC U3	PIN NO.	IC U3	PIN NO.	IC U4	PIN NO.	IC U4	PINC NO.	IC U5	IC U6	IC U7	IC U8	IC U9
1	H	15	P	1	P	13	P	1	L	L	L	L	L
2	P	16	P	2	P	14	P	2	P	H	H	P	P
3	P	17	P	3	P	15	P	3	P	P	P	H	P
4	P	18	P	4	P	16	P	4	P	P	P	H	P
5	P	19	P	5	P	17	P	5	P	H	H	P	P
6	P	20	H	6	P	18	P	6	P	H	L	P	P
7	P	21	P	7	P	19	P	7	P	P	P	H	P
8	P	22	P	8	P	20	P	8	P	P	P	H	L
9	P	23	P	9	P	21	P	9	P	H	H	P	P
10	P	24	P	10	P	22	P	10	L	L	L	L	P
11	P	25	P	11	P	23	P	11	P	H	P	L	P
12	P	26	P	12	L	24	H	12	P	H	H	P	P
13	P	27	H					13	P	P	P	H	P
14	H	28	H					14	P	P	P	H	P
								15	P	H	L	P	P
								16	P	H	L	P	H
								17	P	P	P	L	
								18	P	P	P	L	
								19	P	P	L	P	
								20	H	H	H	H	



BLOCK DIAGRAM

HOWARD W. SAMS & COMPANY

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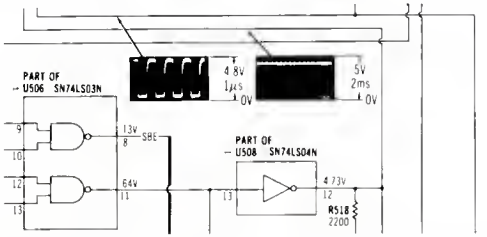
COMPUTERFACTS™ put easy to use, informative technical data right at your fingertips. Each edition includes specific service information on the individual component, along with some overall troubleshooting hints.

The following information is just a sample of the many valuable time saving features contained in this exclusive Sams COMPUTERFACTS publication:

- Preliminary Service Checks section is an easy to use, step by step guide for the experienced technician or hobbyist, and even beginners.
- SAMS famous industry accepted standardized notation schematics containing CIRCUITRACE® , GRIDTRACE™, waveforms, voltages and stage identification.

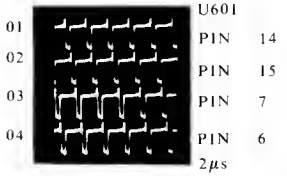


- Step by Step Troubleshooting guides the technician through the necessary procedures to quickly locate the problem.

TROUBLESHOOTING

MICROPROCESSOR CHIP (CPU) OPERATION

Verify the processor is functioning by checking the signals on the address lines (pins 10 thru 24 of IC U600) and the data lines (pins 41 thru 56) using a logic probe or a scope if a logic probe is used, refer to the "Logic Chart" for the correct readings. If a scope is used, the waveforms on the address lines (except pins 22 and 23 which have no signal in Power Up mode) should be similar to Figure 1. The waveforms on the data lines should be similar to Figure 2.

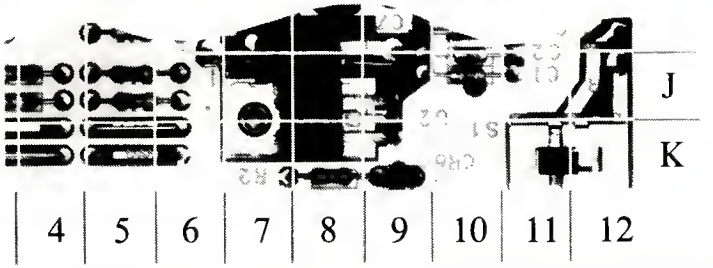


- Logic Chart containing logic probe readings to isolate defective circuitry and components.

LOGIC

PIN NO	IC U100	PIN NO	IC U100	PIN NO	IC U102	IC U103	IC U104	IC U105	IC U106	IC U107	IC U108	IC U109
1	P	21	P	1	L	I	L	L	I	I	I	I
2	P	22	P	2	P	P	P	P	P	P	P	P
3	P	23	P	3	H	H	H	H	H	H	H	H

- Quick Component Location using the SAMS exclusive GRIDTRACE, CIRCUITRACE, and component photographs.



- Complete Components Parts List in an easy to use format with field replacements shown when possible. SAMS unique semiconductor, chip and IC cross-reference gives you many replacements to choose from and is available at your Electronic Distributor.

SEMICONDUCTORS (Select replacement for best results)

			REPLACEMENT DATA				
ITEM No.	TYPE No.	MFGR. Part No.	ECG Part No.	NTE Part No.	RCA Part No.	ZENITH Part No.	NOTES
D102	1SS53	1149-2576	ECG519	NTE519	SK9091/177	103-131	
D103	2N60FM	1149-2527	ECG109	NTE109	SK3088	103-Z9001	
D201	1N4004GP	1201-4205	ECG116	NTE116	SK3312	212-76-02	
D501 thru D503	1SS53	1149-2576	ECG519	NTE519	SK9091/177	103-131	

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